

AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

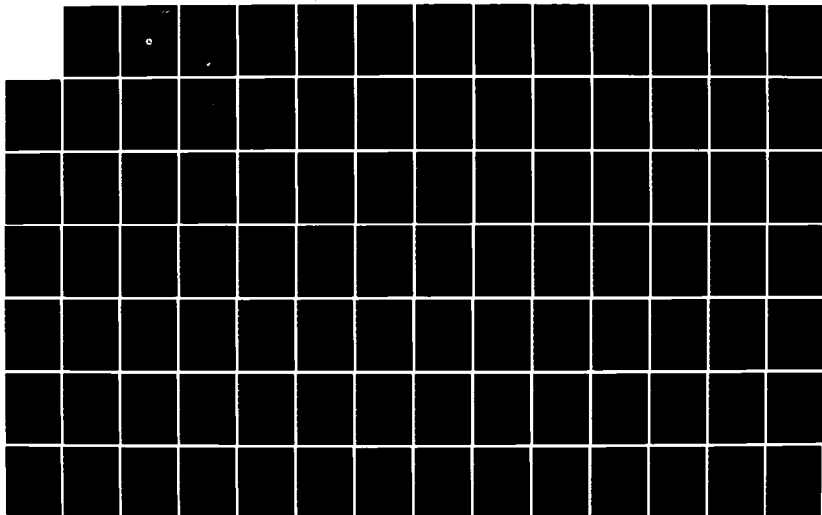
1/6

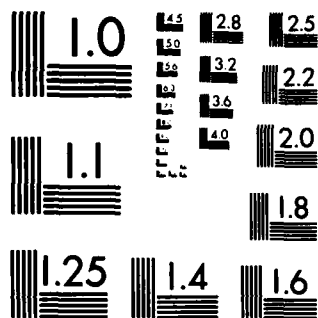
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

12

ANALYSIS AND INTERPRETATION OF
CURRENT MEASUREMENTS FROM THE BEAUFORT SEA

Paul Greisman and Allan Blaskovich
Dobrocky SEATECH Limited
P.O. Box 6500
Sidney, B.C., Canada V8L4M7

Reviewed and Edited by
R. Q. Robe
U.S. Coast Guard Research and Development Center
Avery Point, Groton, CT 06340

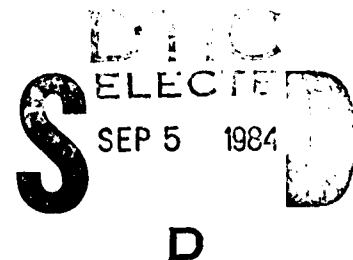
U.S. Coast Guard Research and Development Center
Avery Point Groton, Connecticut 06340



APRIL 1984

FINAL REPORT

Document is available to the U.S. Public through the
National Technical Information Service
Springfield, Virginia 22161



PREPARED FOR
U. S. DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

OFFICE OF RESEARCH AND DEVELOPMENT

WASHINGTON D.C. 20593

84 08 31 001

AD-A145 197

DTIC FILE COPY

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

The contents of this report reflect the views of the Coast Guard Research and Development Center, which is responsible for the facts and accuracy of data presented. This report does not constitute a standard, specification, or regulation.



SAMUEL F. POWEL, III

Technical Director

U.S. Coast Guard Research and Development Center
Avery Point, Groton, Connecticut 06340



Technical Report Documentation Page

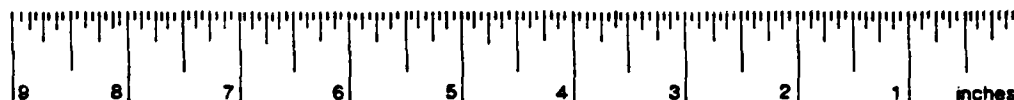
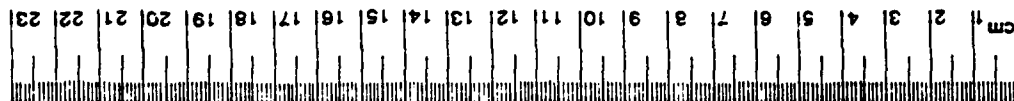
1. Report No. CG-D-18-84	2. Government Accession No. A145197	3. Recipient's Catalog No.	
4. Title and Subtitle Analysis and Interpretation of Current Measurements from the Beaufort Sea		5. Report Date	
		6. Performing Organization Code	
		8. Performing Organization Report No. (b) CGR/DC 2/84	
7. Author(s) Paul Greisman and Allan Blaskovich		10. Work Unit No. (TRAIS)	
9. Performing Organization Name and Address Dobrocky SEATECH Limited P.O. Box 6500 Sidney, B.C., Canada V8L4M7		11. Contract or Grant No.	
		13. Type of Report and Period Covered Final Report April 1981 to August 1981	
12. Sponsoring Agency Name and Address Department of Transportation U.S. Coast Guard Office of Research and Development Washington, D.C. 20593		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract <p>In order to gain a better understanding of pack ice motion on the Beaufort Sea continental shelf, the U.S. Coast Guard and the Institute of Ocean Sciences, Patricia Bay, Canada, undertook a joint program to measure currents, ice motion and the atmospheric pressure field during March-August 1981. An array of four current meter moorings was deployed in the American Beaufort Sea at 146°W longitude across the continental shelf break while in the Canadian sector three moorings were deployed along the 100 m isobath. A total of 13 current meters were deployed in March and April, 12 of which were recovered in August. CTD measurements were made during the deployments through the sea ice with winch and data logger mounted in a de Havilland Twin Otter.</p> <p>The present view of ocean circulation in the Beaufort Sea is based principally upon dynamic heights and computed baroclinic, geostrophic currents. These computations show a vertical shear westward toward the surface. If a reference level of no motion is assumed at the bottom (or in fact any depth below 100 m), the results of these computations are in qualitative agreement with the observed westward ice drift in the southern Beaufort Sea. Recent measurements by Aagaard (in press) showed, however, that the flow on the continental shelf is eastward. The cross-slope array deployed by the USCG in 1981 was designed to locate the region where the eastward continental shelf flow vanishes and is replaced by the westward flow of the Beaufort gyre. The cross-slope array of instruments in fact demonstrated that there is no mean westward flow below 40 m depth and the Beaufort gyre is confined to the surface layers in this region. The deeper layers move eastward in the southern Beaufort and the possibility exists that all the deeper waters of the Beaufort gyre circulate in an anti-clockwise sense.</p> <p>Coherence spectra among various current meter records and meteorological forcings were computed. The coherence computations between a current meter record from the shelf break and a) the direct wind stress, b) the longshore gradient of the wind stress, and c) the curl of the wind stress, all show a high degree of coherence (above the 95% significant level), but none of these atmospheric driving forces appears to dominate. Large events in the current records in July appear uncorrelated with atmospheric processes.</p>			
17. Key Words Beaufort Sea, currents, geostrophic, meteorological forcing		18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, VA 22161	
19. Security Classif. (of this report) UNCLASSIFIED	20. SECURITY CLASSIF. (of this page) UNCLASSIFIED	21. No. of Pages	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	* 2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (WEIGHT)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (EXACT)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures. Price \$2.25. SD Catalog No. C13.10.286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (WEIGHT)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	0.125	cups	c
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (EXACT)				
°C	Celsius temperature	8/5 (then add 32)	Fahrenheit temperature	°F

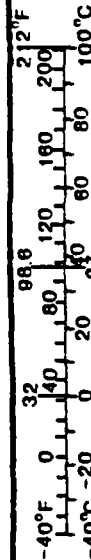


TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS	i
LIST OF FIGURES	ii
LIST OF TABLES	ii
LIST OF DATA APPENDICES	iii
1. SUMMARY	1
2. INSTRUMENTATION	4
3. CTD MEASUREMENTS AND DYNAMIC HEIGHT TOPOGRAPHY	5
4. CURRENT METER MEASUREMENTS	13
5. BUOY DATA	18
6. WINDS	19
7. ANALYSIS	22
8. REFERENCES	26

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<input type="checkbox"/>
By _____	
Distribution _____	
Availability _____	
Dist	Special
A/1	



LIST OF FIGURES

	<u>Page</u>
1. Location Chart Current Meter Moorings, CTD Stations, and Initial Positions of PRL Buoys	3
2. Typical Profile of Temperature, Salinity and Sigma-t from the Beaufort Sea Continental Slope, 5 April 1981	6
3. Dynamic Height Topography, April 1981, 0/50 decibars	7
4. Dynamic Height Topography, April 1981, 0/75 decibars	8
5. Dynamic Height Topography, April 1981, 0/100 decibars	9
6. Dynamic Height Topography, April 1981, 0/300 decibars	10
7. Dynamic Height Topography, April 1981, 5/300 decibars	11
8. Dynamic Height Topography, April 1981, 300/1000 decibars	12
9. Current Meter Mooring Locations	14
10. Chart of the Arctic Ocean	15
11. Location of Points Where Wind Stress was Computed	20

LIST OF TABLES

1. Current Meter and Mooring Particulars	16
2. Data Reduction Products	17
3. Location of Points Where Wind Stress was Computed	19
4. Coherence in 5 Bands of Longshore Component of Flow at CG11 with Atmospheric Driving Forces	24

LIST OF DATA APPENDICES

1. CTD Casts.
2. Time Series and Filtered Time Series Plots of all Current Meter Data.
3. Stick Plots of USCG Current Meter Records (25 hour Low Pass Filtered).
4. Time Series Plots of Temperatures at USCG Current Meters.
5. Weekly histograms of Offshore versus Longshore Velocity Component (Longshore is 118° T, Offshore is 28° T), histograms of Temperature versus Longshore Velocity Component and Direction versus Speed for USCG Current Meters.
6. Percent Occurrences of Direction and Speed for USCG Current Meters.
7. Progressive Vector Diagrams for USCG Current Meters. The Congested Region at the Beginning of the Record is Expanded as a Second PVD. The Period of Expansion is Shown in the Title.
8. Tidal Stream Analysis for USCG Current Meters.
9. Power Spectra of Longshore and Offshore Velocity Components.
10. Time Series Plots of Longshore and Offshore Components of Velocity of Drifting Buoys 2577, 2578 and 2579.
11. Time Series Plots of Surface Atmospheric Pressure and Air Temperature at Three Points in the Southern Beaufort Sea.
12. Time Series Plots of Geostrophic Wind Speeds and Direction at Four Points in the Southern Beaufort and Chukchi Seas.
13. Time Series Plots of the Longshore and Offshore Components of the Wind Stress.
14. Time Series Plots of the Differences in Atmospheric Pressure and Air Temperature Among Selected Points.
15. Time Series Plots of the Differences in Longshore and Offshore Wind Stress Components Between Selected Points.
16. Time Series Plots of the Curl of the Wind Stress at Two Locations.

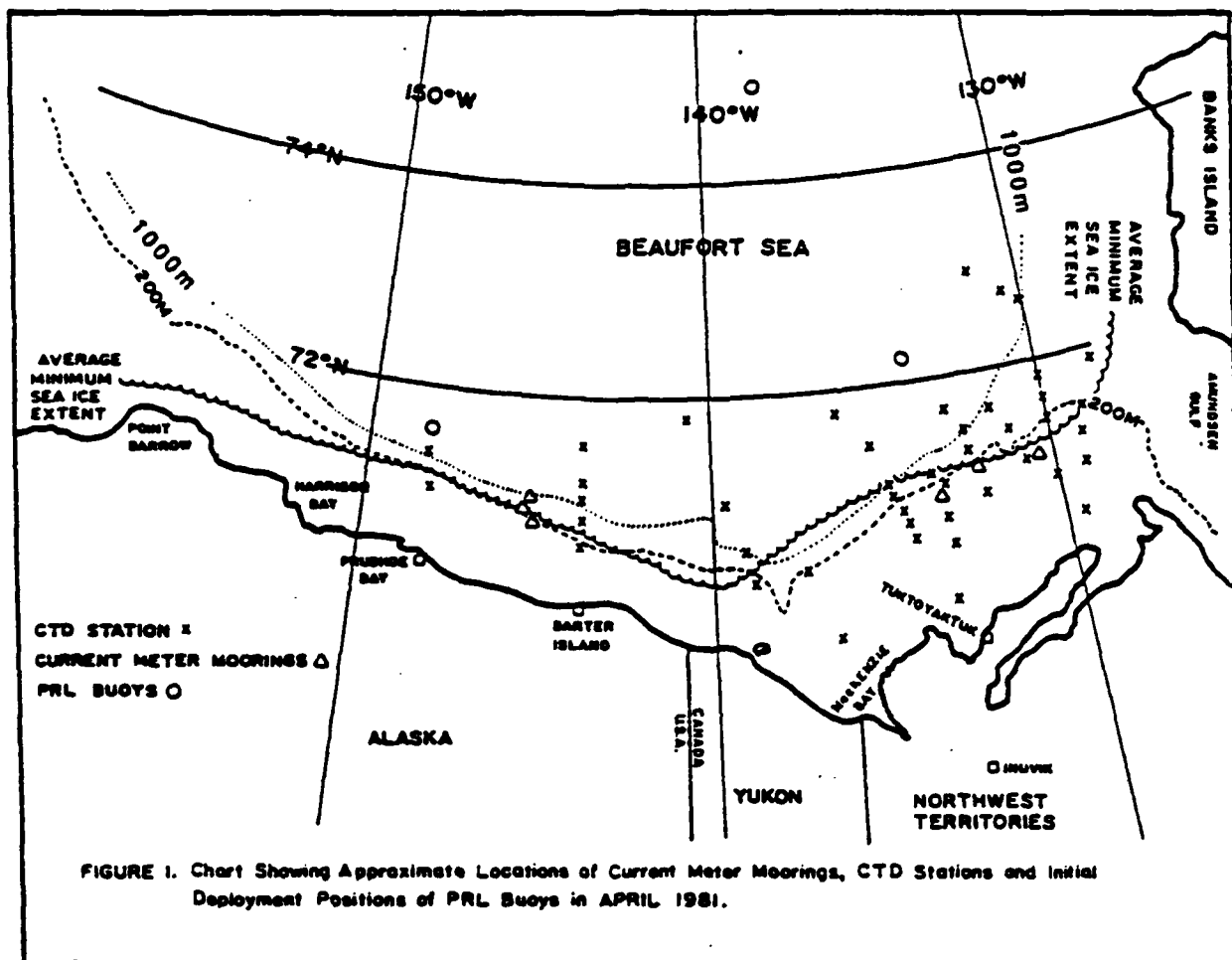
1. SUMMARY

In order to gain a better understanding of pack ice motion on the Beaufort Sea continental shelf, the U.S. Coast Guard and the Institute of Ocean Sciences, Patricia Bay, Canada, undertook a joint program to measure currents, ice motion and the atmospheric pressure field during March-August 1981. An array of four current meter moorings was deployed in the American Beaufort Sea at 146° W longitude across the continental shelf break while in the Canadian sector three moorings were deployed along the 100 m isobath. A total of 13 current meters were deployed in March and April, 12 of which were recovered in August. CTD measurements were made during the deployments through the sea ice with winch and data logger mounted in a de Havilland Twin Otter.

The locations of the current meter moorings, the CTD stations as well as the initial positions of drifting buoys equipped with barometric pressure sensors are shown in Figure 1.

The present view of ocean circulation in the Beaufort Sea is based, principally, upon dynamic heights and computed baroclinic, geostrophic currents. These computations show a vertical shear westward toward the surface. If a reference level of no motion is assumed at the bottom (or in fact any depth below 100 m), the results of these computations are in qualitative agreement with the observed westward ice drift in the southern Beaufort Sea. Recent measurements by Aagaard (in press) showed, however, that the flow on the continental shelf is eastward. The cross-slope array deployed by the USCG in 1981 was designed to locate the region where the eastward continental shelf flow vanishes and is replaced by the westward flow of the Beaufort gyre. The cross-slope array of instruments in fact demonstrated that there is no mean westward flow below 40 m depth and the Beaufort gyre is confined to the surface layers in this region. The deeper layers move eastward in the southern Beaufort and the possibility exists that all the deeper waters of the Beaufort gyre circulate in an anti-clockwise sense.

Coherence spectra among various current meter records and meteorological forcings were computed. The coherence computations between a current meter record from the shelf break and a) the direct wind stress, b) the longshore gradient of the wind stress, and c) the curl of the wind stress, all show a high degree of coherence (above the 95% significance level), but none of these atmospheric driving forces appears to dominate. Large events in the current records in July appear uncorrelated with atmospheric processes.



2. INSTRUMENTATION

The moorings in the U.S. sector were equipped with AMF vector averaging current meters. These meters record case orientation and vane orientation for every four rotor revolutions. At the end of the 15 minute sampling interval the average accumulated North and East vectors are stored on magnetic tape. At the same time a temperature measurement is made.

The Canadian moorings were equipped with Aanderaa current meters which record one direction and the number of rotor revolutions of each sampling interval. The Aanderaa instruments also recorded temperature and conductivity.

CTD (Conductivity-Temperature-Depth) measurements were made with an Arctic-type Guildline CTD (accuracy $.005^{\circ}\text{C}$, $.01^{\circ}/_{\text{oo}}$).

Also in the course of the field work, three Polar Research Labs satellite tracked drifting buoys were deployed. These were equipped with thermistors and barometric pressure sensors and constituted part of the POLEX grid of buoys deployed over most of the Arctic Ocean (Thorndike, et al., 1982).

All operations in March and April 1981 were conducted with a chartered Canadian ski-equipped Twin Otter (Borek Air; Don Boe, pilot). The skill of the pilot permitted landing on the mobile pack ice within 1 km of all designated locations. Current meters were deployed by melting a 1 m diameter ring through the ice, removing the ice plug and lowering the moorings, anchor first, to the bottom. CTD measurements were made through a hole augered in the ice utilizing a winch mounted inside the aircraft. The PRL buoys, although designed for deployment from the air, were placed on the ice after landing at the pre-chosen sites.

3. CTD MEASUREMENTS AND DYNAMIC HEIGHT TOPOGRAPHY

Sixty-one CTD casts were performed in late March and April in the southern Beaufort Sea. The data are presented graphically for each cast in Appendix 1. The profiles all demonstrate the well-known characteristics of the Beaufort Sea. Figure 2 is a typical profile of salinity, temperature and sigma-t from the region. Density varies with salinity but little with temperature for water around 0° C, so that the sigma-t profiles bear a close resemblance to salinity profiles. The stratification in the Beaufort Sea is confined to the upper 200 m and at many locations 50% of the stratification is in the upper 50 m of the water column. The temperature profiles show an under-ice temperature at the in situ freezing point with a slight subsurface maximum at 50 to 60 m depth variously ascribed to warmer water advected through the Bering Strait and relict warm water from local heating in summer. The major feature of the temperature profiles is, of course, the broad maximum in temperature centred at 500 m depth. This is the signature of the Atlantic water which enters the Arctic between Greenland and Svalbard. In the Beaufort Sea, this water mass has nearly completed its (probably) anti-clockwise circuit of the Arctic Ocean.

Dynamic height topographies are plotted between six different pressure surfaces in Figures 3 through 8. These were drawn after dynamic heights were computed at each station from density measurements.

It should be remembered that dynamic height computations provide the magnitude of the geostrophic shear only. In order to compute absolute currents a reference level is necessary. As will be seen later, the mean currents at depth are eastward due to a strong barotropic component of flow and it is only the upper 40 m or less that actually move westward.

The 0/300 decibar chart (Figure 6) shows a westward geostrophic current in the upper water column of $.07 \text{ m s}^{-1}$ directed westward toward the surface. All the charts exhibit the same sense of shear with the exception of the 300/1000 decibar chart where the shear is extremely weakly indicated in the opposite direction.

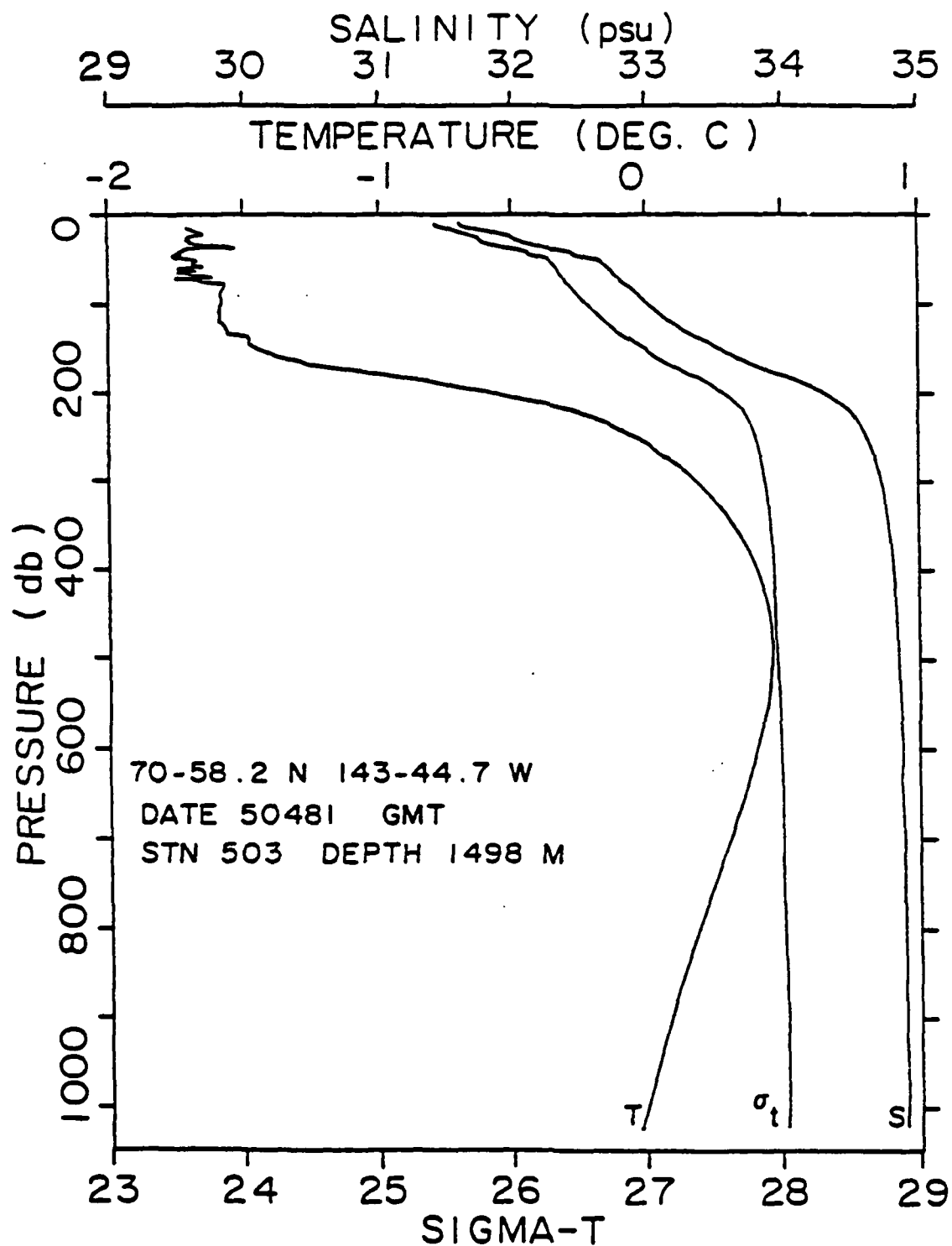
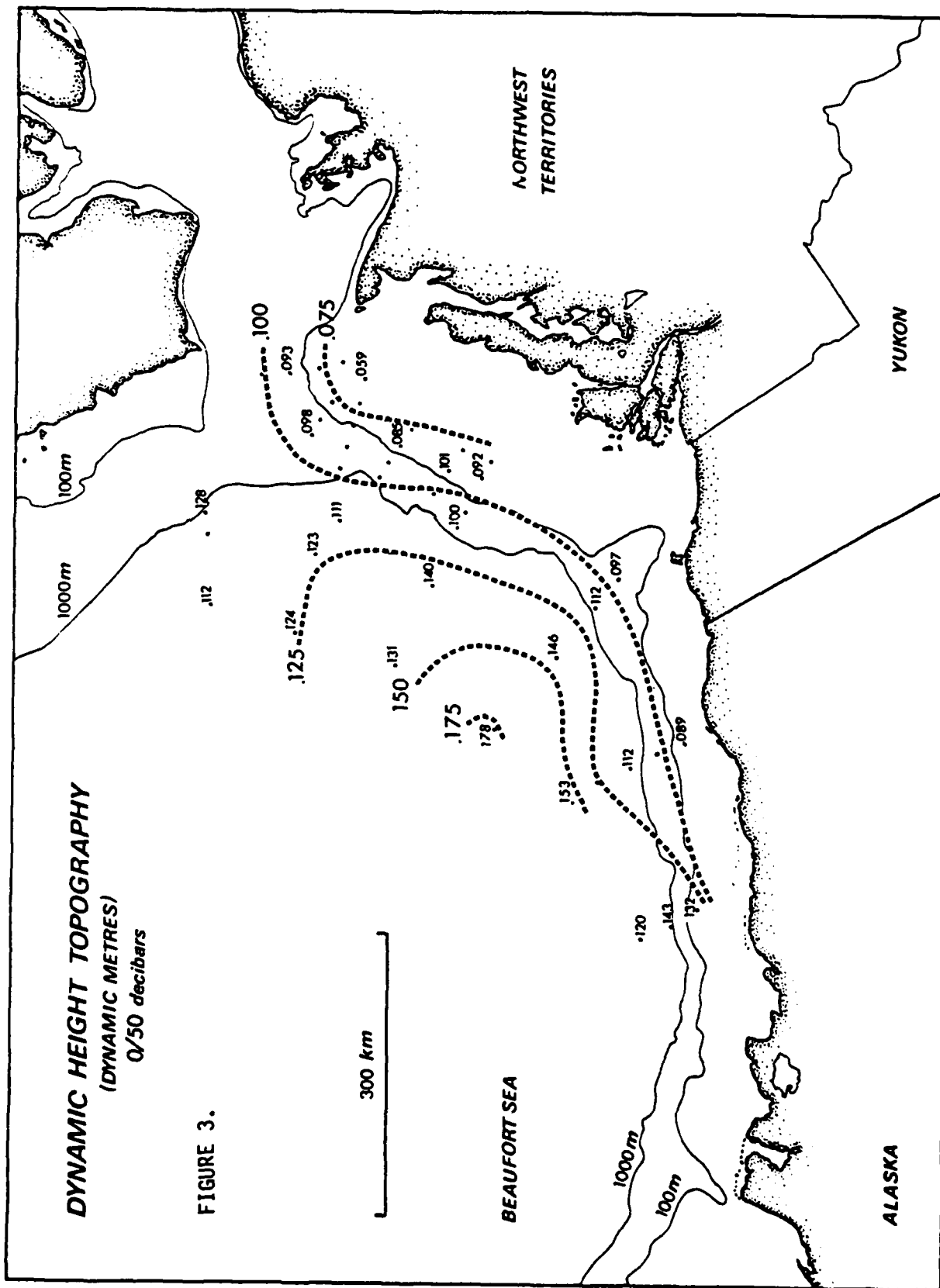
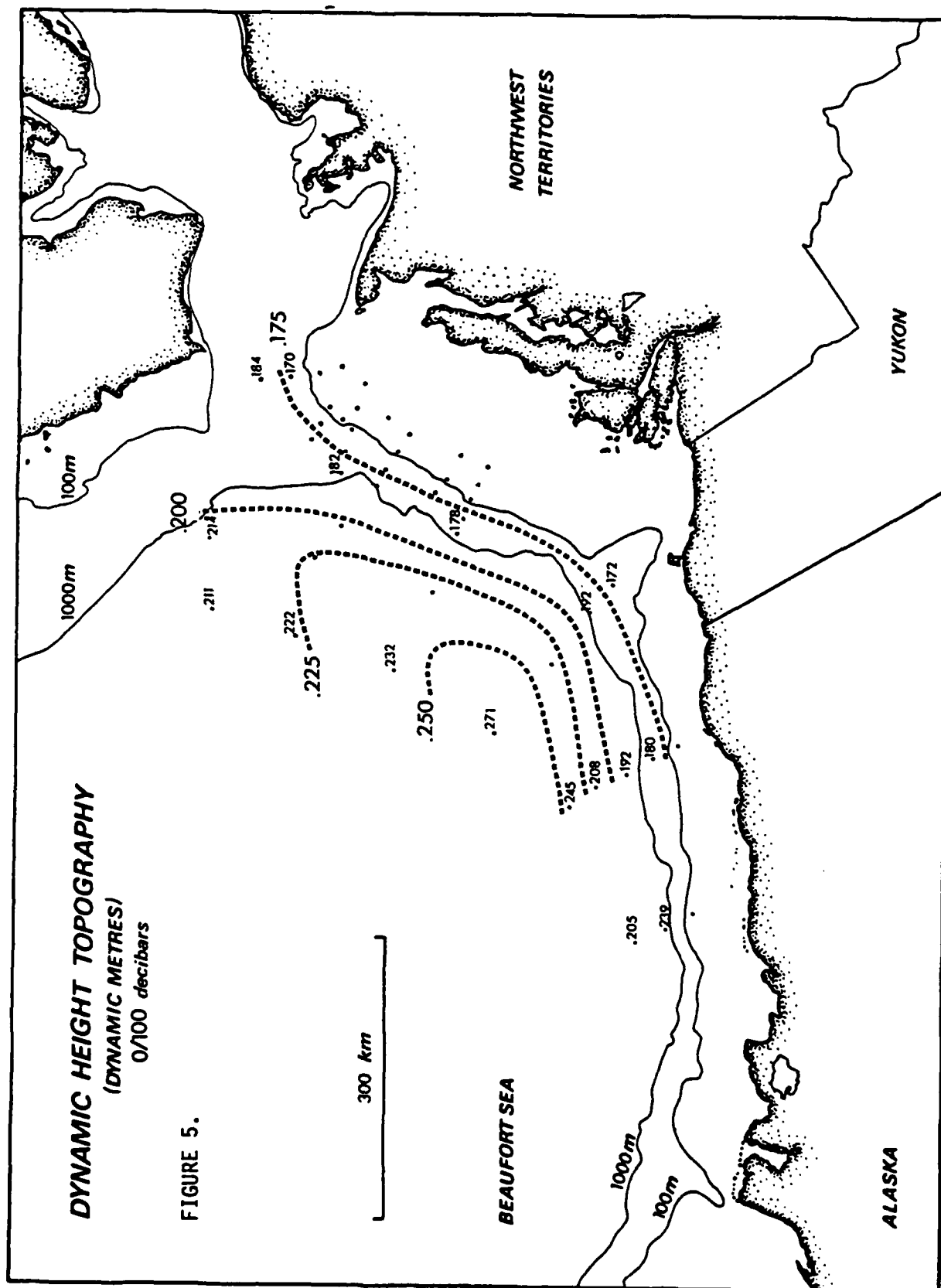
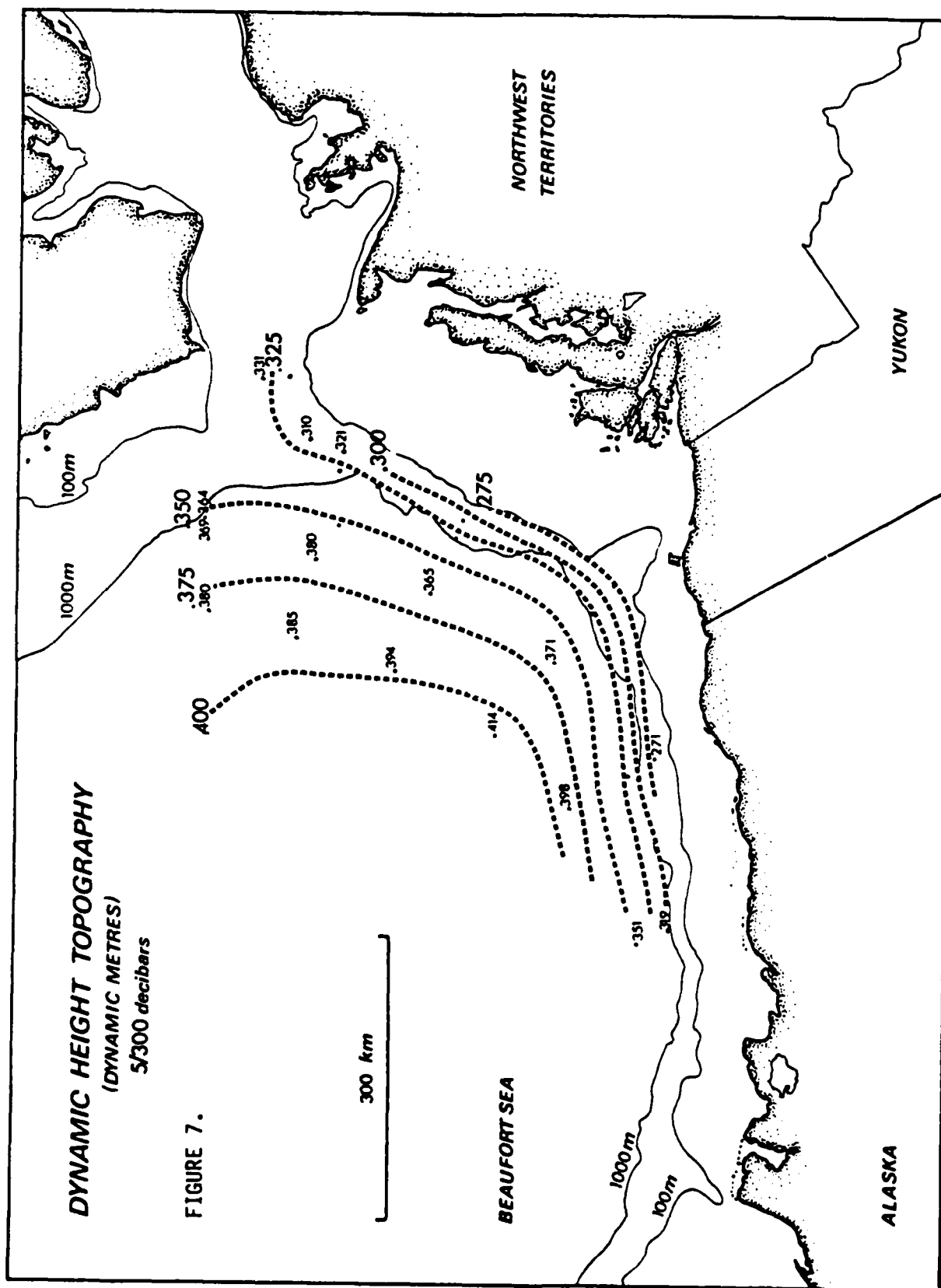
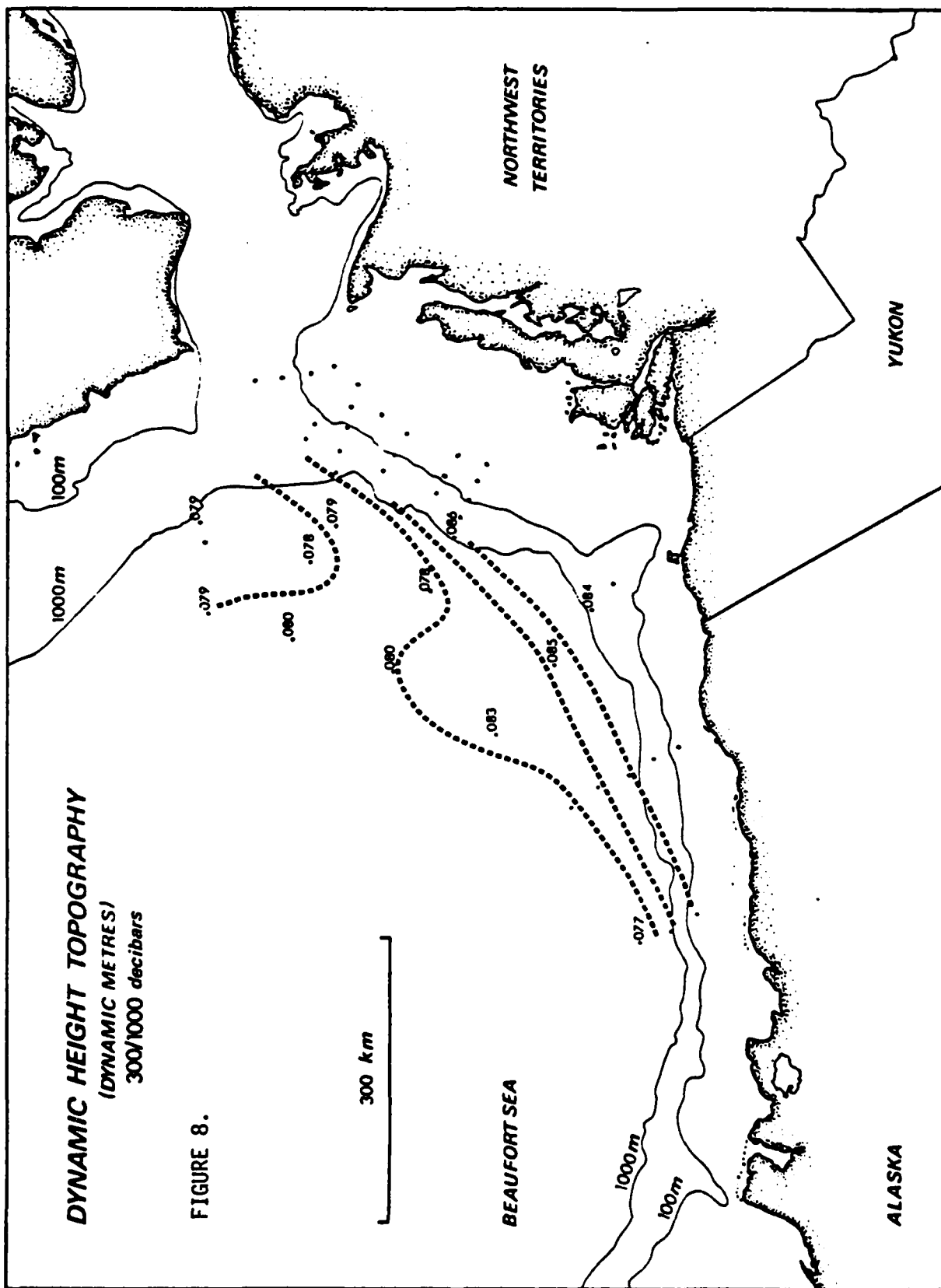


FIGURE 2. Typical Profile of Temperature, Salinity and Sigma-t from the Beaufort Sea Continental Slope, 5 April 1981. Salinity in Practical Salinity Units of Perkin and Lewis, 1980. Pressure in decibars.









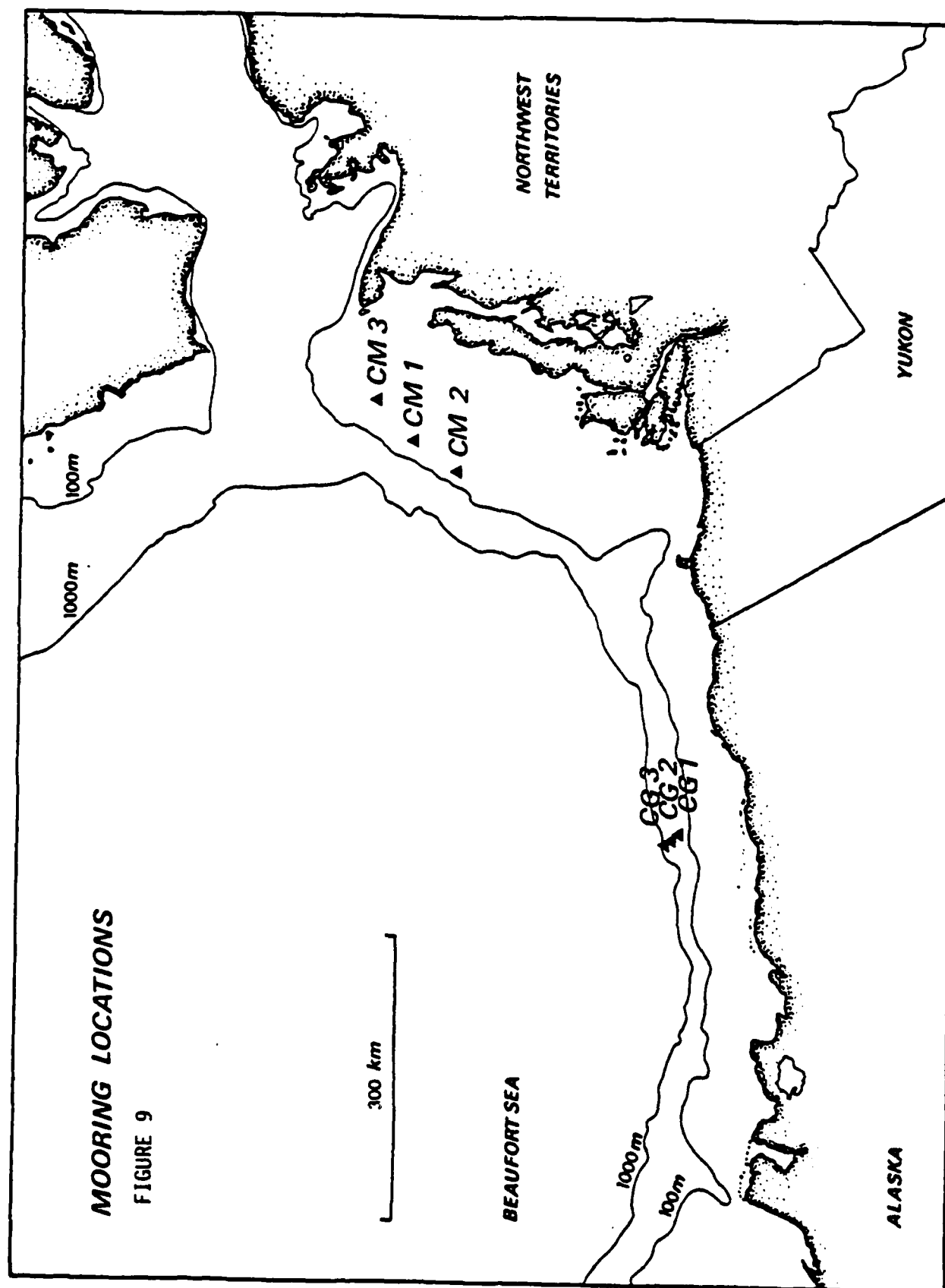
4. CURRENT METER MEASUREMENTS

Of the 13 current meters deployed, on seven moorings, 12 meters on six moorings were recovered. The location of the mooring sites is shown in Figure 9 and particulars of each current meter record are tabulated in Table 1.

The current meter moorings were all deployed through the ice during March and April 1981. The recovery of the western moorings in the American sector was performed from the USCGC POLAR SEA, while the Canadian moorings were recovered by the CHS HUDSON.

At each of the current meters the mean velocity was found to be eastward. The measured mean vertical shear is in agreement with the computed geostrophic shear so that the deep instruments showed a stronger mean eastward flow than the shallow instruments. It would appear, therefore, that the westward flow associated with the Beaufort gyre is concentrated in the upper 40 m of the water column in the southern Beaufort Sea. The possibility is thus raised that the deeper waters of the entire Beaufort Sea circulate in an anti-clockwise manner below the surface water which circulates clockwise. This speculation leads one to envisage, on a large scale, a spiral estuarine circulation in the Arctic Ocean: dense Atlantic waters sinking west of Svalbard flowing to the east, north of Severnaya Zemlya then along the Siberian shelf break and into the Beaufort Sea, while the surface waters follow the opposite path and exit the Arctic east of Greenland. (See Figure 10 for place names and conjectural Atlantic Water flow.)

Two other observations of a general nature are worth noting here. First, the currents measured in the Canadian Beaufort exhibit clear tidal fluctuations. They are indubitably tidal, and not inertial, since a fortnightly beating is apparent between the M_2 and S_2 tidal constituents (see time series plots Appendix 2). Second, there are extremely large events present in the records from the American sector. During July, speeds of over 40 cms^{-1} to the east were measured,



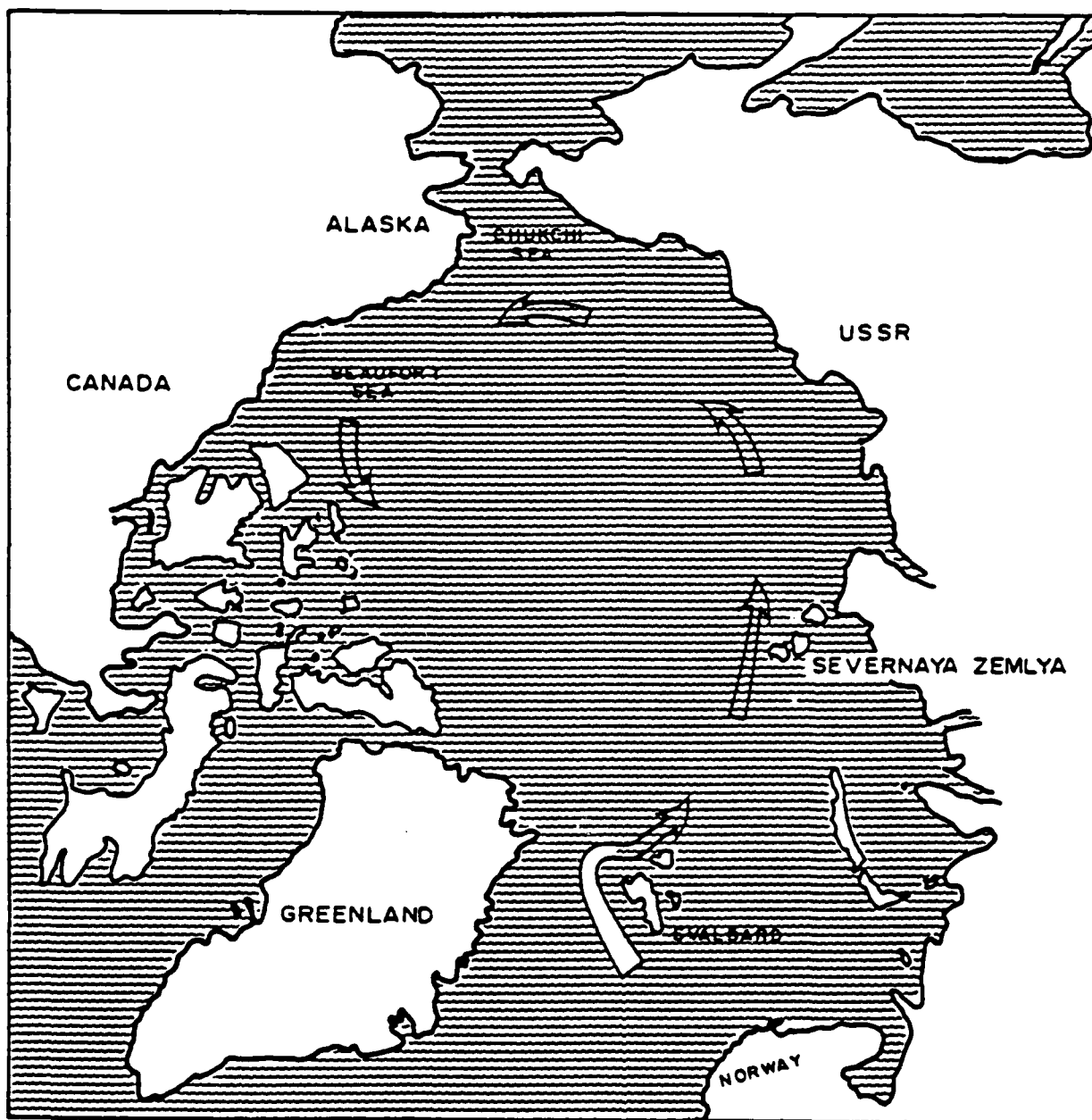


Fig. 10 The Arctic Ocean. Arrows indicate the conjectured sub-surface flow of Atlantic water.

TABLE 1. CURRENT METER AND MOORING PARTICULARS

Moorings	Water Depth (m)	Location	Deployment	Recovery (GMT)	Meters	Instrument Depth (m)	Comments	Sampling Interval Minutes
CG1	188	70°53.0'N	0315	1900	CG11	40	AMF VACM	15
		145°55.3'W	9 APR 81	1 AUG 81	CG12	150	AMF VACM	15
CG2	368	70°56.4'N	0315	2300	CG21	40	AMF VACM	15
		146°00.6'W	10 APR 81	1 AUG 81	CG22	268	AMF VACM - Meter stopped recording 0230 3 Jun 81	15
CG3	840	70°57.8'N	0200	0300	CG31	40	AMF VACM - Compass failed - No direction information	15
		146°02.9'W	11 APR 81	2 AUG 81	CG32	268	AMF VACM	
CM1	99	71°11.3'N	2150	0010	2462	41	Aanderaa	30
		132°09.0'W	28 MAR 81	18 AUG 81	2470	94	Aanderaa	30
CM2	77	70°56.5'N	2220	2100	2466	39	Aanderaa	30
		133°33.0'W	25 MAR 81	17 AUG 81	3228	72	Aanderaa	30
CM3	62	71°23.2'N	2330	0340	2468	37	Aanderaa	30
		130°21.5'W	23 MAR 81	18 AUG 81	3223	57	Aanderaa	30

which were associated with reversals of flow over 20 cm s^{-1} at current meter at 40 m depth at sites CG1 and CG2 and at 150 m depth at CG1. Speeds over 50 cm s^{-1} were also recorded in July at 40 m depth at site CG3.

In order to more closely scrutinize the current meter data, several data reduction techniques were employed. These are listed with their location in Table 2.

TABLE 2. DATA REDUCTION PRODUCTS AND THEIR LOCATIONS

Time series plots of longshore and offshore current components	All current meters	Appendix 2
25 hour low pass filtered time series plots of longshore and offshore current components	All current meters	Appendix 2
Stick plots of current meter records (25 hour low pass filtered)	USCG meters	Appendix 3
Time series plots of temperature	USCG meters	Appendix 4
Weekly histograms of offshore vs. longshore velocity components	USCG meters	Appendix 5
Histograms of temperature vs. longshore velocity component	USCG meters	Appendix 5
Histograms of direction vs. speed	USCG meters	Appendix 5
Percent occurrence of direction Percent occurrence of speed	USCG meters	Appendix 6
Progressive vector diagrams	USCG meters	Appendix 7
Tidal stream analyses	USCG meters	Appendix 8
Power spectra of offshore and longshore current components	USCG meters	Appendix 9
Time series plots of longshore and offshore components of velocities of drifting buoys 2577, 2578 and 2579	USCG PRL buoys	Appendix 10

5. BUOY DATA

In conjunction with the 1981 Arctic Ocean Buoy Program (Thorndike, et al. 1982), three Polar Research Labs satellite-tracked buoys with barometric pressure sensors were deployed in the southern Beaufort Sea. These packages were deployed on the pack ice and therefore provide ice motion information as well as some information on the pressure field over the Arctic Ocean. The daily mean positions of each of the Arctic Ocean buoys as well as the twice daily barometric pressures are given in Thorndike et al. (1982).

We have computed the velocities of buoys 2577, 2578 and 2579 (those deployed in the southern Beaufort Sea) and produced time series plots of their longshore and offshore velocity components during the period of current meter operation. These time series plots can be found in Appendix 10. The buoys move clockwise around the Beaufort gyre in a direction opposite to that of the currents below 40 m depth.

6. WINDS

The sea surface pressure fields produced by Thorndike, et al. (1982) were employed to calculate geostrophic winds over the Beaufort Sea. The surface wind stress was then computed from the geostrophic winds by assuming a 40% reduction in wind speed through the atmospheric Ekman layer, a 20° rotation to the left, a drag coefficient of 1.3×10^{-3} and an air density of 1.3 kg m^{-3} .

The wind stress can be expressed in terms of the 10 m wind velocity as:

$$\vec{\tau} = \rho_a C_D |\vec{V}| \vec{V}$$

where $\vec{\tau}$ is the wind stress, ρ_a the density of air, C_D the drag coefficient and \vec{V} the 10 m wind velocity.

In order to examine the atmospheric driving forces for ice motion and the subsurface currents, the wind stresses were computed at the four points listed in Table 3 and shown in Figure 11.

TABLE 3. LOCATION OF POINTS WHERE WIND STRESS WAS COMPUTED

<u>Point</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Longshore Direction</u>	
A	71°30' N	153° W	120° T	NE of Point Barrow
B	71°00' N	146° W	118° T	At longitude of USCG CMS
C	70°30' N	139° W	090° T	Herschel Canyon
D	70°01' N	165° W	042° T	Chukchi Sea

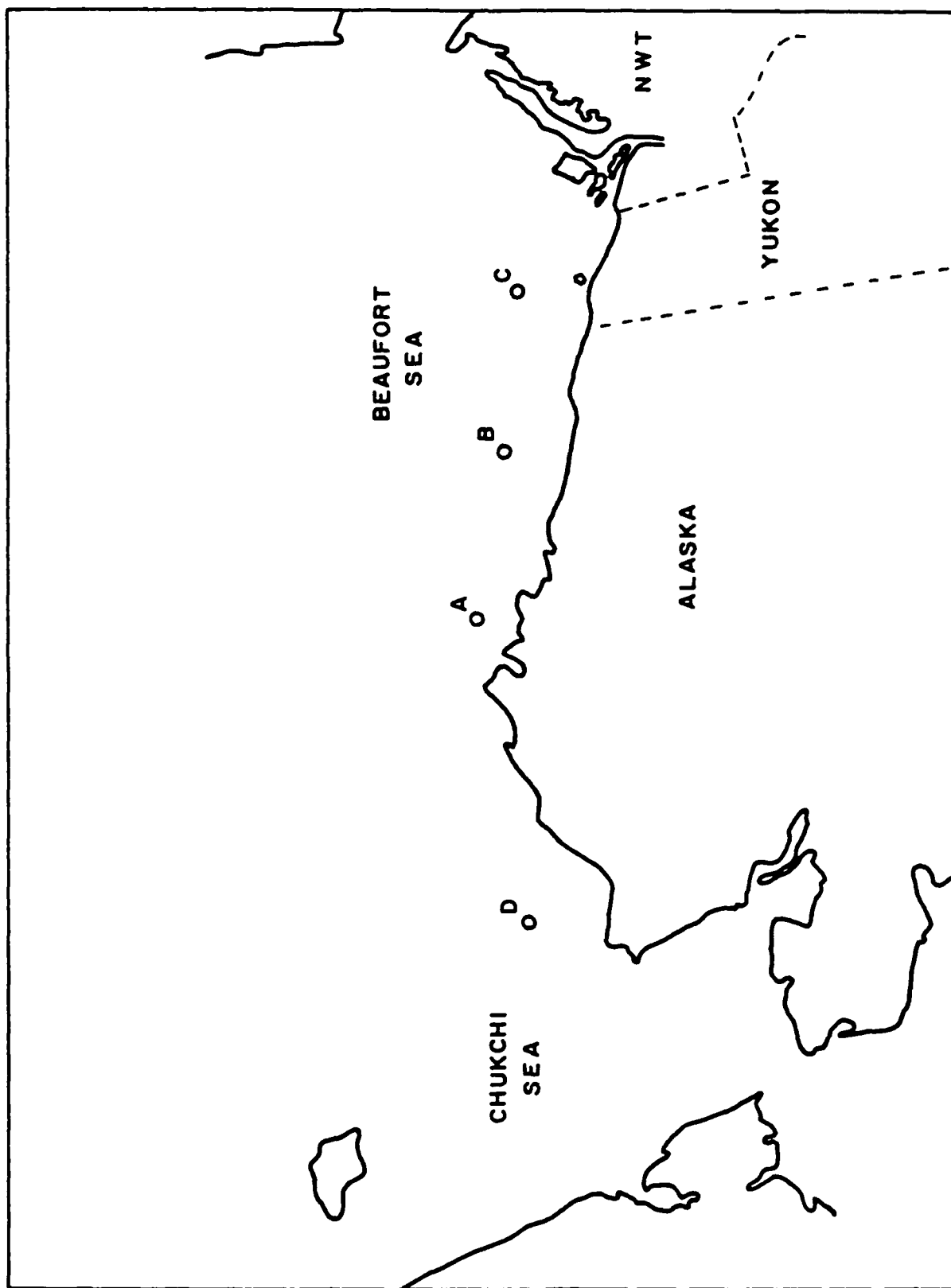


FIGURE 11. Location of Points Where Wind Stress was Computed.

The atmospheric pressures and air temperature at points A, B and C are shown in time series plots in Appendix 11.

Time series plots of geostrophic wind speed and direction at points A, B, C and D are presented in Appendix 12.

In order to provide a proper intercomparison between low-passed current records and the wind stress time series, the twice daily computed wind stresses were filtered with a 24 hour low pass filter of the same degree as the current records (Godin, 1972). The time series plots of the longshore and offshore components of the filtered wind stresses are shown in Appendix 13.

The motivation for this study was the determination of those atmospheric processes which drive ice drift and ocean currents. After a cursory examination of the data, it was hypothesized that the currents were driven by longshore gradients in the longshore wind stress. Previous investigators, however, have shown that differences in atmospheric pressure between two locations are well correlated with flows in this region (e.g., Mountain et al., 1976). In order to investigate these possibilities, time series plots of differences in atmospheric pressure and temperature between points were computed and all presented in Appendix 14. Differences in wind stress are shown in Appendix 15. For comparison purposes, time series plots of the curl of the wind stress at points B and D are presented in Appendix 16.

7. ANALYSIS

The data show geostrophic shear directed westward from the bottom to the top of the water column with mean currents at 40 m depth and below flowing eastward. The ice drift is to the west as is the prevailing wind. Large, nearly barotropic events are present in the current records at CG1 and CG2 which exhibit current speeds of over 40 cm s^{-1} . An important conclusion is that the Beaufort gyre does not penetrate to depths greater than 40 m over the continental slope. In fact, the possibility is raised that the gyre may everywhere be confined to the surface layers under which a slow counter-clockwise flow of the Atlantic water dominates. One of the original intents of the experimental design was to define the sloping surface which was thought to bound the Beaufort gyre to the south. In that the westward flow associated with the gyre only occurs at depths less than 40 m, we have no direct measurements in this westward flow and our experiment can yield no information on the southern boundary of the gyre.

It is clear that the surface currents as well as the ice drift are driven by the direct wind stress. We have only performed cursory computations to investigate the wind-ice coupling which is dealt with in detail by Thorndike and Colony (1982). The more difficult question arising from this suite of data is the nature of the driving force for the eastward flow along the Beaufort Sea shelf and slope and the mechanisms which drive the large current reversals of July at current meters CG11, CG12 and CG21.

Aagaard (in press) discusses the subsurface eastward flow and refers to it as "The Beaufort Current". His measurements were all made shoreward of the 200 m isobath, and the deepest current meter was located at 188 m depth. He found no explanation for the eastward flow, but speculated that it was driven by the sea level difference between the Pacific and Atlantic Oceans and that the flow continues through the Canadian Archipelago into Baffin Bay. Although this explanation might hold in a long-term climatological sense, it sheds no light on the very pronounced fluctuations in current velocity measured in 1981.

We proceeded by examining local atmospheric driving forces in the Beaufort-Chukchi Sea region. H. Melling (pers. comm.) suggested that the Beaufort Current may behave similarly to a coastal undercurrent such as described by McCreary (1981). In this model, the alongshore gradient in the wind stress sets up an alongshore sea surface slope whose associated pressure gradient force is oppositely directed to that of the wind stress. The result is that surface currents flow counter to the deep current. The measurements in the Beaufort Current certainly support such a scheme and we sought to compare the time series of the longshore gradient in wind stress with the eastward flow of the current. Visual inspection of the two time series, Appendices 2 and 13, was disappointing, however, since the large current reversals in July did not seem correlated with an energetic event in the wind stress field. Coherence spectra were computed between the wind stress differences and the longshore component of current. In order to yield a high statistical confidence we computed the coherence in five frequency bands from low pass filtered data (periods shorter than 24 hours are excluded) sampled at 12 hour intervals. This scheme provided about 40 degrees of freedom and assured us that the problems of coherence computation between line spectra, each of 1 degree of freedom, would be avoided. The results of this coherence analysis are shown in Table 4. We were gratified to find the two data sets broadly coherent at a significance level exceeding 95%. We concluded that the coastal undercurrent dynamics could be applicable to the Beaufort Current.

In order to demonstrate that undercurrent dynamics were definitely applicable we also performed coherence computations between the longshore component of flow and the direct wind stress at one point. We found equivalently high coherence to that computed with the longshore wind stress gradient! Curious now, we computed coherence spectra between the flow and the offshore wind stress, between the flow and the curl of the wind stress over the Beaufort Sea and lastly, between the flow and the curl of the wind stress over the Chukchi Sea. All the meteorological forcings were coherent with the longshore component of flow at very highly significant levels as shown in Table 4. We cannot, therefore, prove our undercurrent hypothesis from the meteorological data that we have employed.

TABLE 4. COHERENCES BETWEEN THE LONGSHORE COMPONENT OF FLOW AT
CG11 AND ATMOSPHERIC DRIVING FORCES

Central Frequency	.0028 h ⁻¹	.0106 h ⁻¹	.0210 h ⁻¹	.0314 h ⁻¹	.0391 h ⁻¹
Range of Periods in Spectral Band	2650-149 h	149-63 h	63-38 h	38-28 h	28-23 h

Driving Forces:

Alongshore Wind Stress Gradient	.409	.542	.274	.170	.215
Alongshore Wind Stress @ CG Mooring	.452	.266	.254	.135	.241
Offshore Wind Stress @ CG Mooring	.183	.403	.296	.328	.198
Curl of Wind Stress Beaufort	.358	.506	.217	.401	.200
Curl of Wind Stress Chukchi	.445	.286	.081	.206	.353

Note: 95% significance level in coherence for 40 degrees of freedom = 0.27.
80% significance level in coherence for 40 degrees of freedom = 0.20.

It is apparent from our computations that fluctuations in the Beaufort Current are coherent with fluctuations in the surface pressure field from which all our wind velocities and stresses are computed. Unfortunately, the surface pressure grid is very coarse in the Arctic Ocean with grid spacing of approximately 300 km. Along the Alaska-Yukon-N.W.T. coast the weather station spacing is little better, perhaps 200 km. We must conclude that demonstration of an hypothesis such as ours of an undercurrent can only be accomplished with wind data collected with anemometers erected on the sea ice over the continental shelf and slope. These would have to be located along the length of the Alaska-Yukon-N.W.T. coast and spaced at intervals of 100 km or less. Similar weather stations would be required in the Chukchi Sea and Bering Strait in order to derive a physical understanding of the currents other than that they are driven by large-scale atmospheric pressure gradients. (Most oceanic flows are driven indirectly by the atmosphere, the only exception of note being the tides).

In order to explain the sense of flow and the attendant large variations in the flow, it will be necessary to collect sufficient meteorological data to distinguish between general fluctuations of atmospheric kinetic energy with time and the fluctuation of that physical quantity which, in fact, drives the Beaufort Current counter to the motion of the pack ice.

8. REFERENCES

- Aagaard, K. In press. The Alaskan Beaufort Sea.
- Godin, G. 1972. The Analysis of Tides. University of Washington Press, 264 pps.
- McCreary, J.P. 1981. A Linear Stratified Ocean Model of the Coastal Undercurrent. Phil. Trans. Roy. Soc. London. A. Vol. 302, No. 1469, 385-413.
- Mountain, D.G., L.K. Coachman and K. Aagaard. 1976. On the Flow Through Barrow Canyon. Journal of Physical Oceanography, V.6, 461-470.
- Perkin, R.G. and E.L. Lewis. 1980. The Practical Salinity Scale: Fitting the Data. IEEE Journal of Ocean Engineering V.OE-5(1), 9-16.
- Thorndike, A.S., R. Colony and E.A. Munoz. 1982. Arctic Ocean Buoy Program, Data Report, Polar Science Center, University of Washington, 137 pps.
- Thorndike, A.S. and R. Colony. 1982. Sea Ice Motion in Response to Geostrophic Winds. Journ. Geophys. Rec. V.87, No. C8, 5845-5852.

DATA APPENDIX 1

CTD Casts

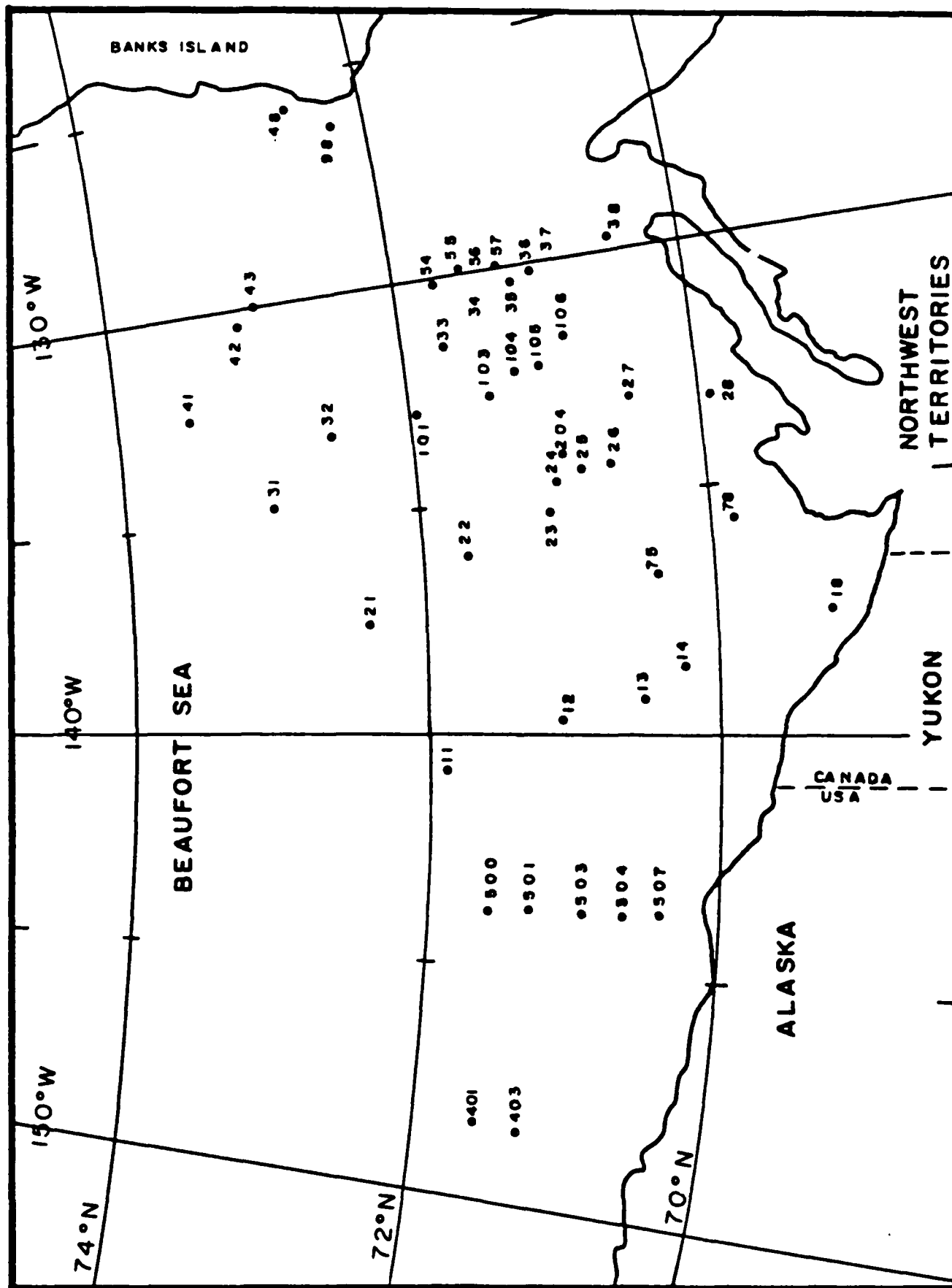
Location of CTD stations are indicated on the following page.

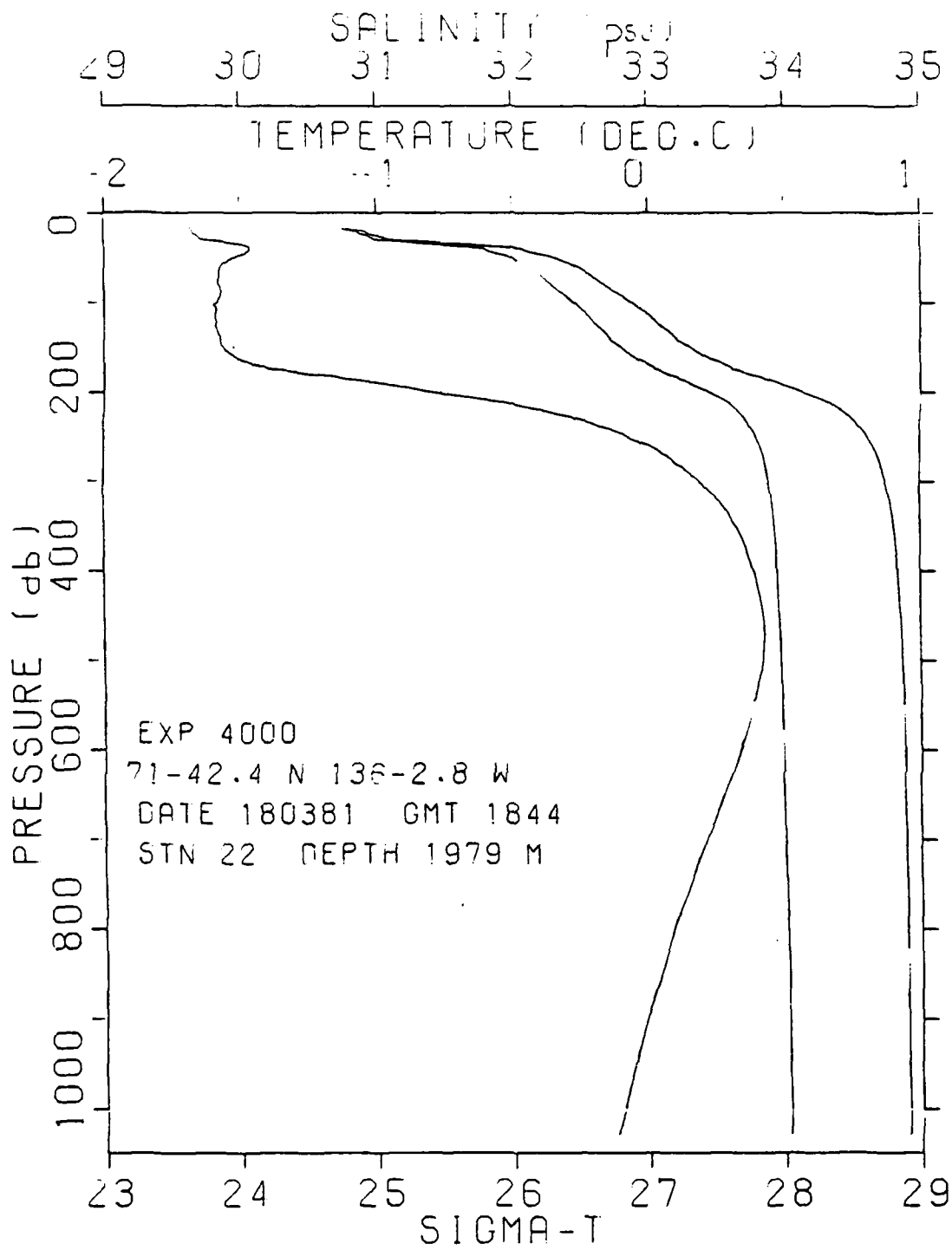
Dates and times are GMT.

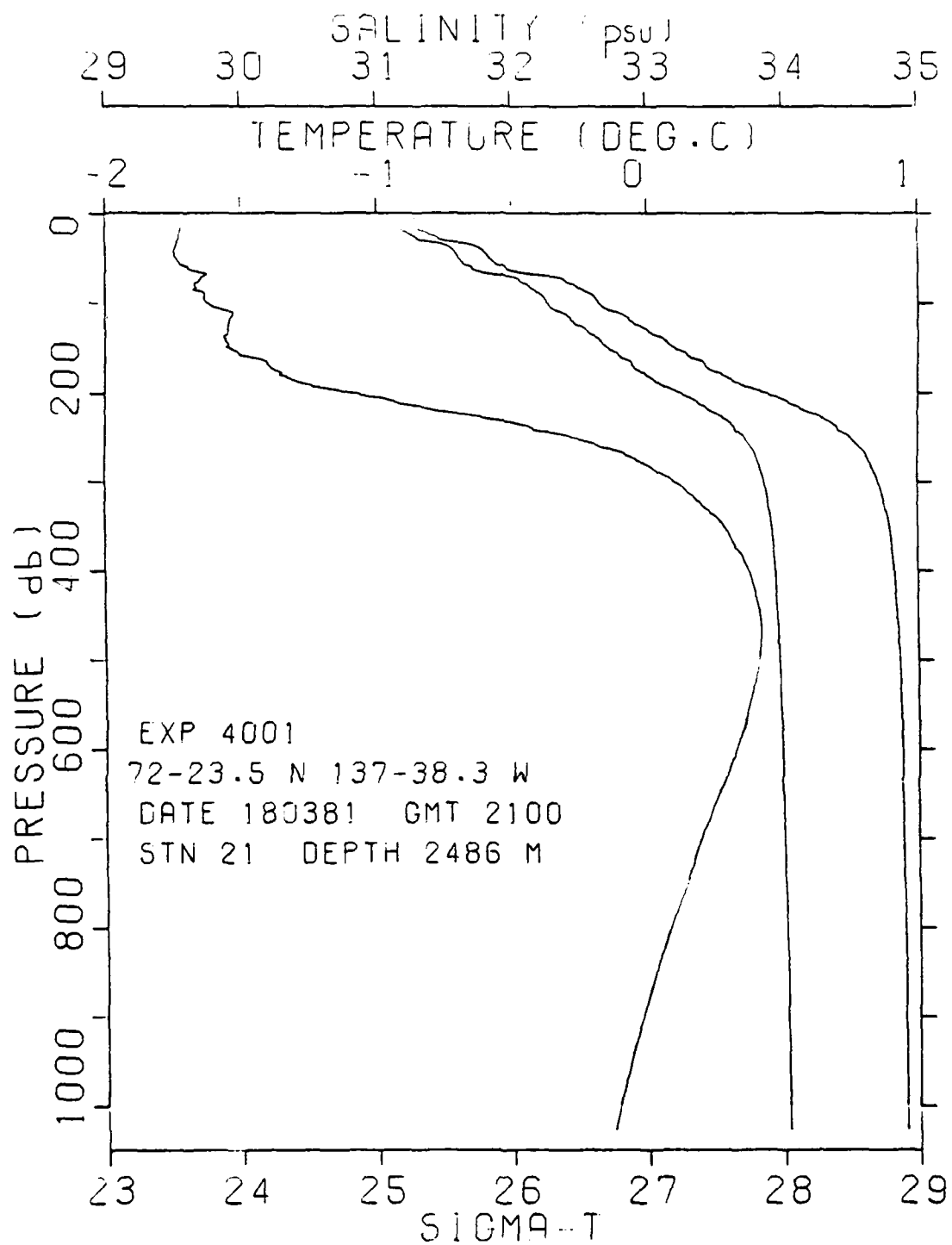
Date is MONTH DAY YEAR.

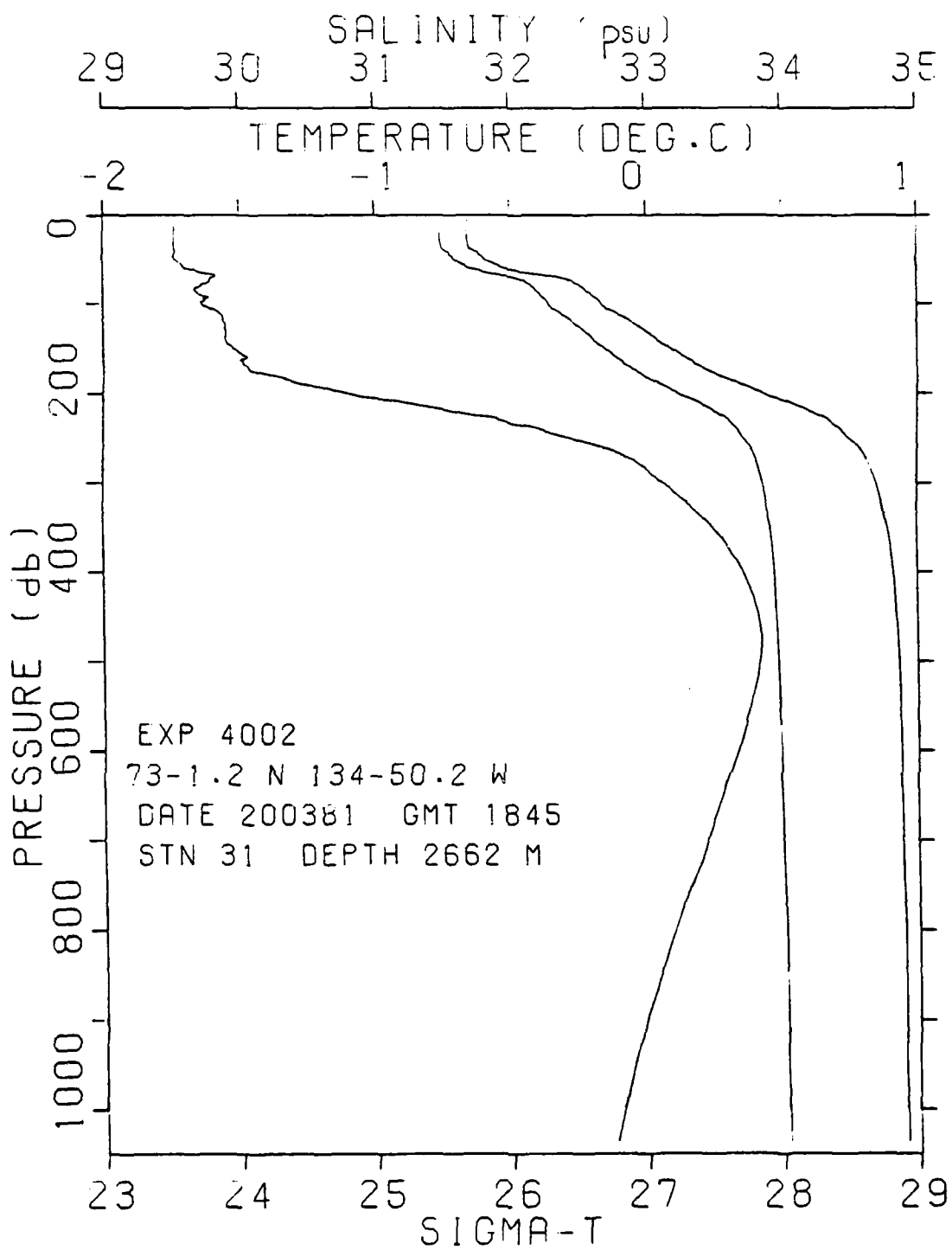
Pressure in decibars, roughly equivalent to depth in metres.

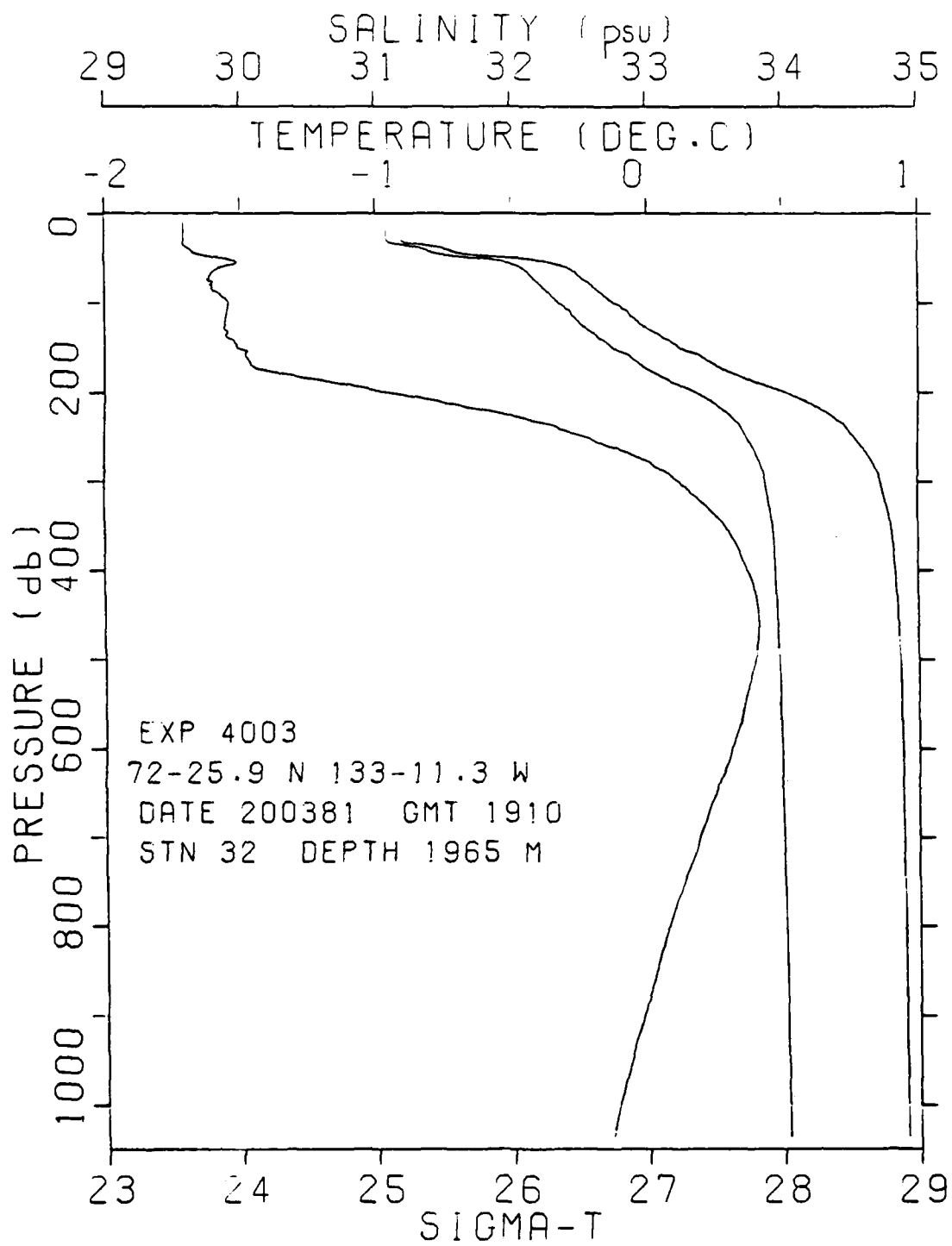
Salinity in Practical Salinity Units, nearly identical to
parts per thousand.

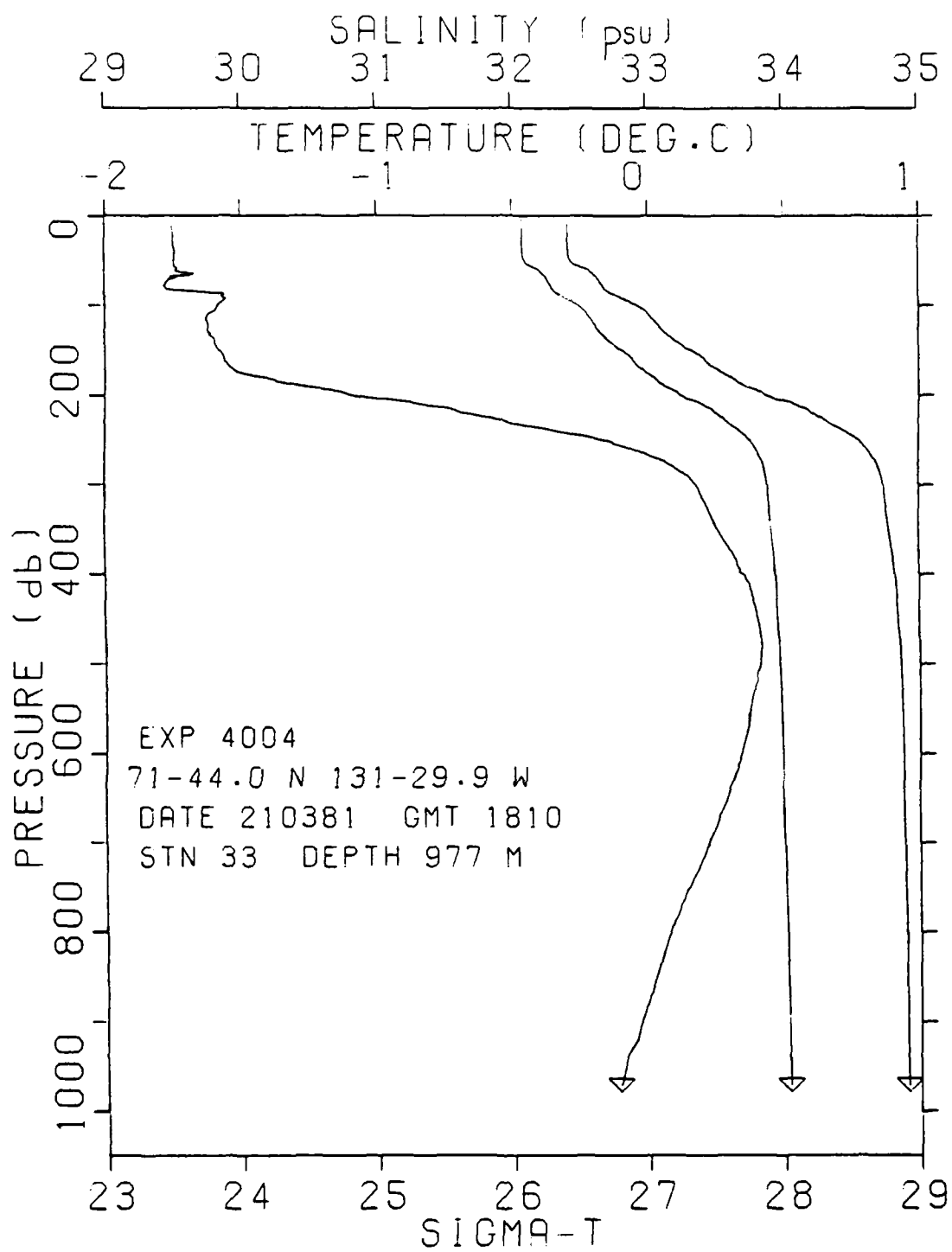


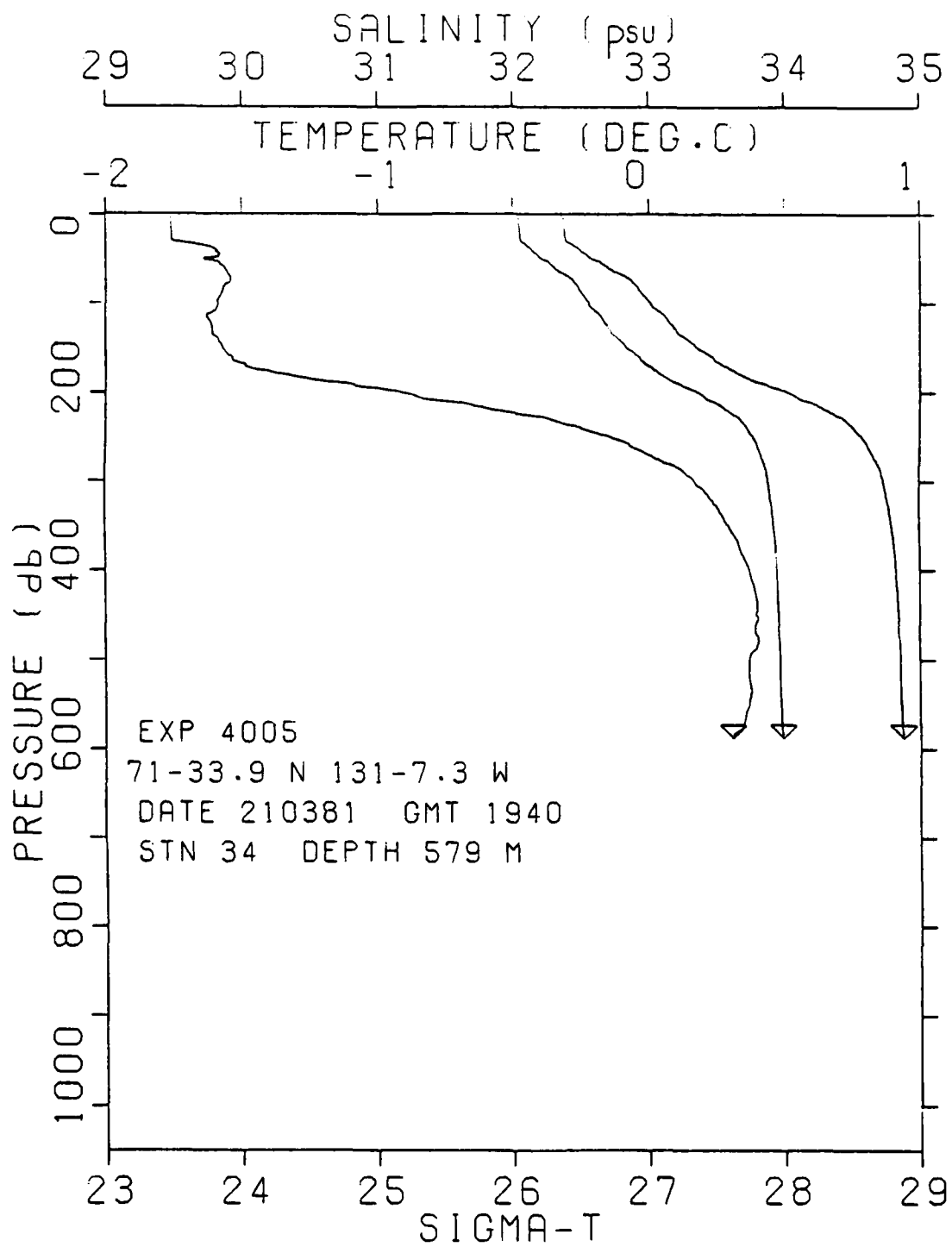


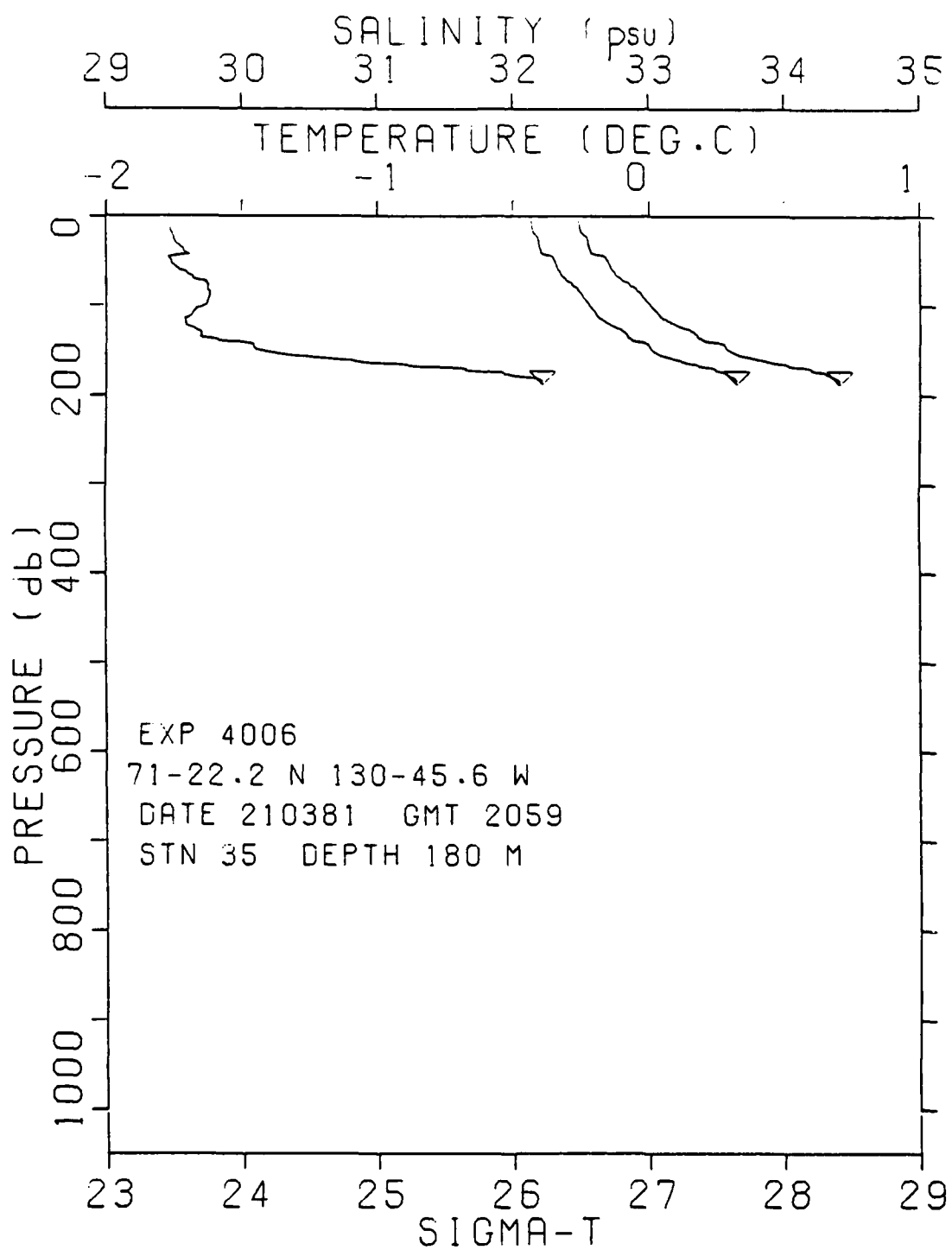


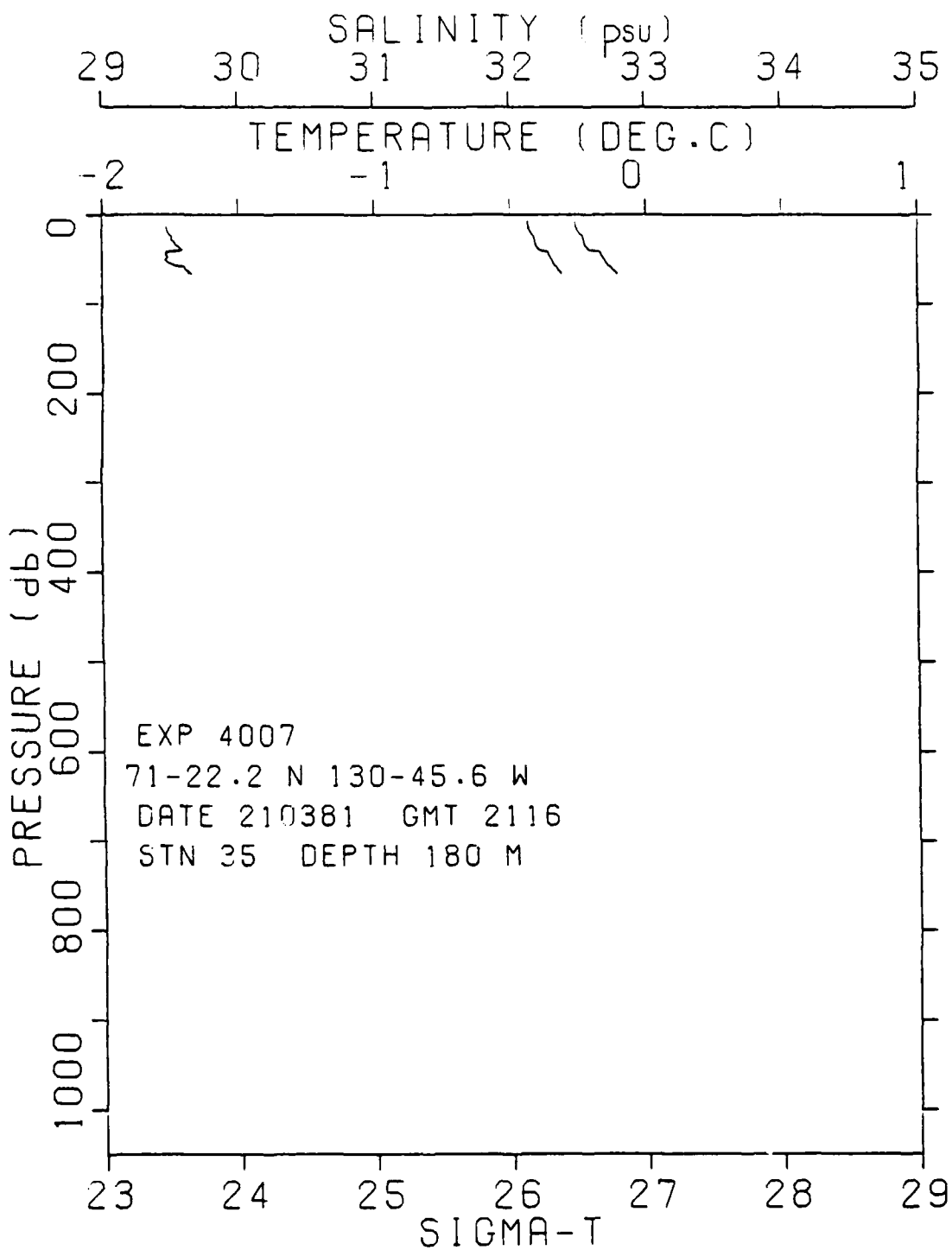


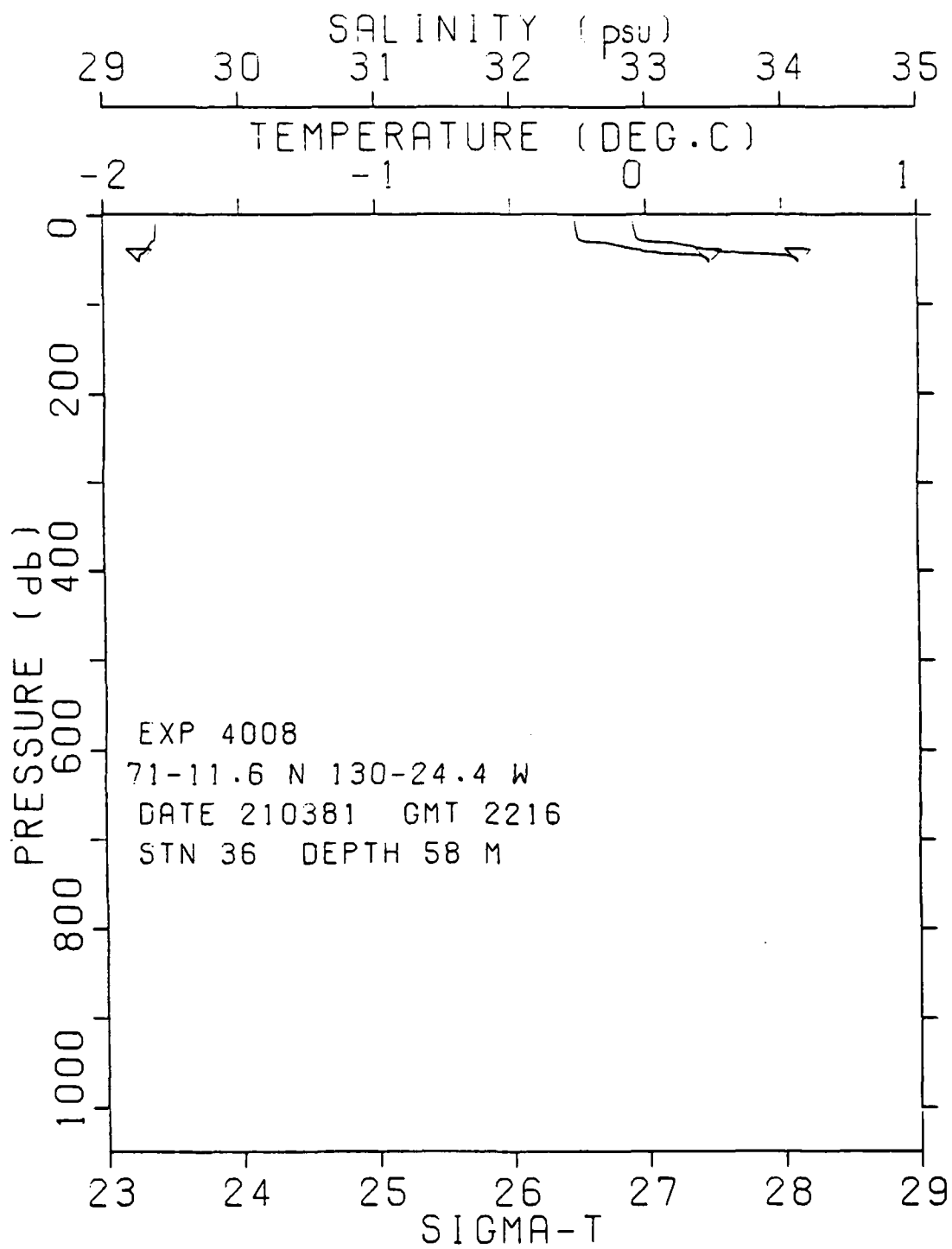


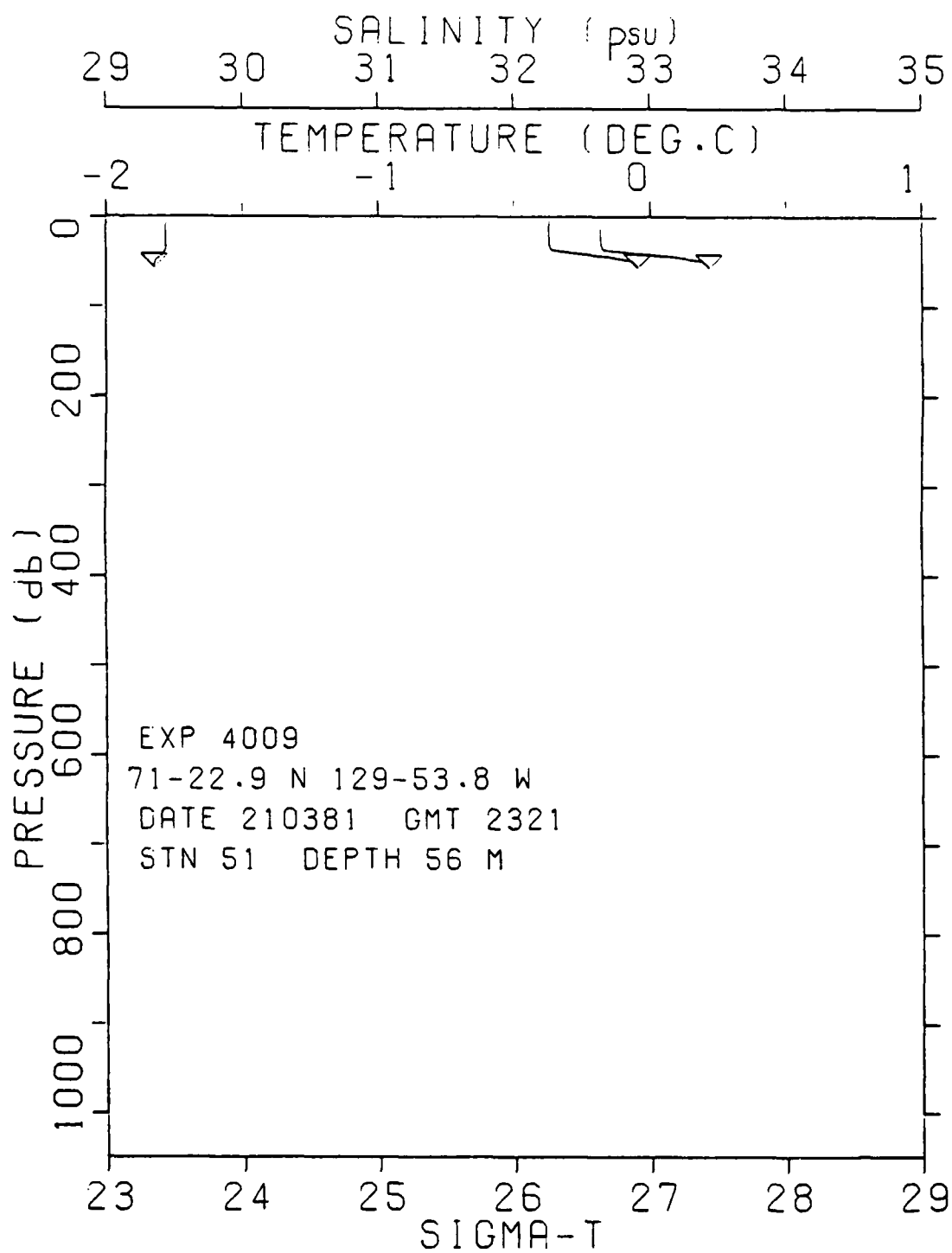


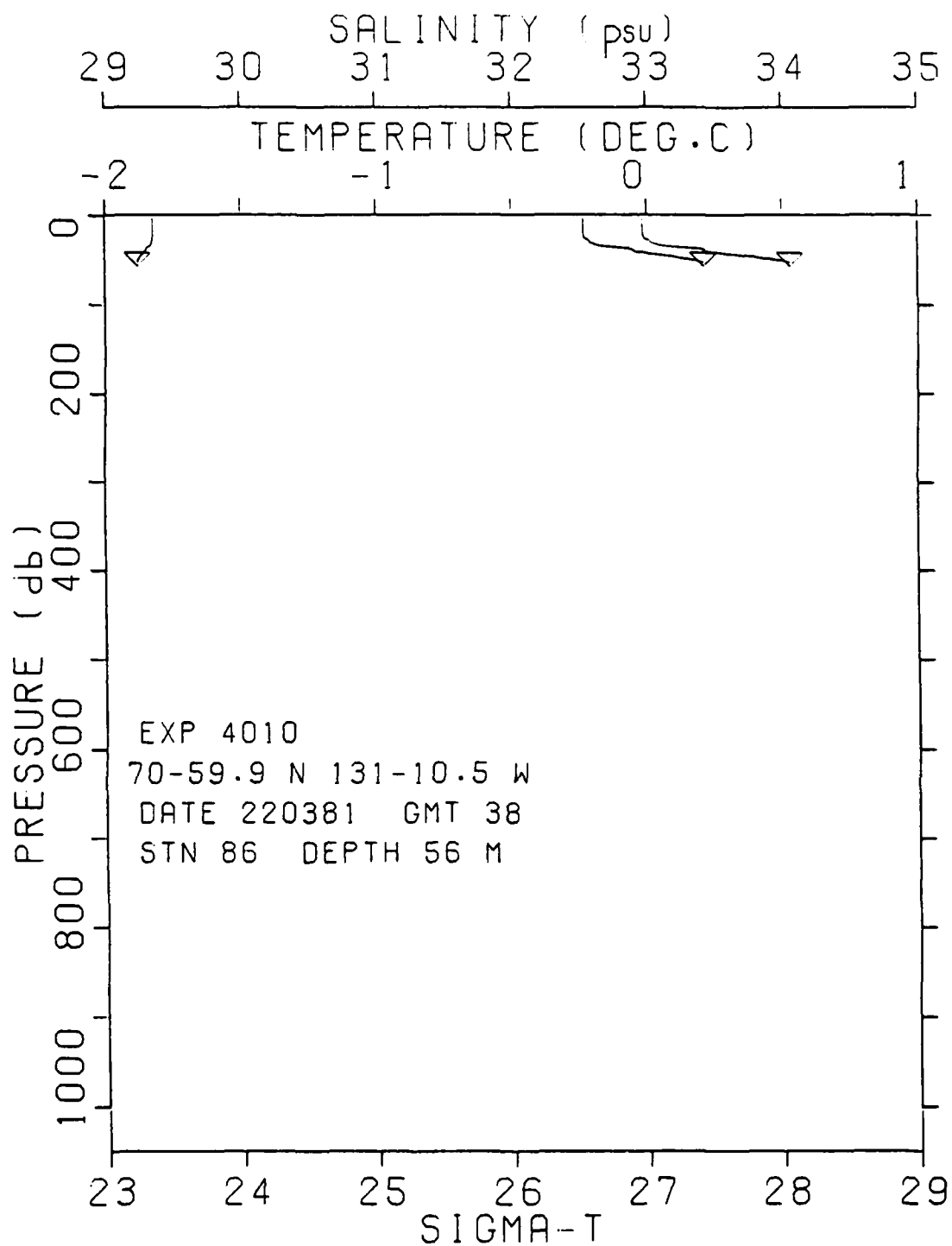


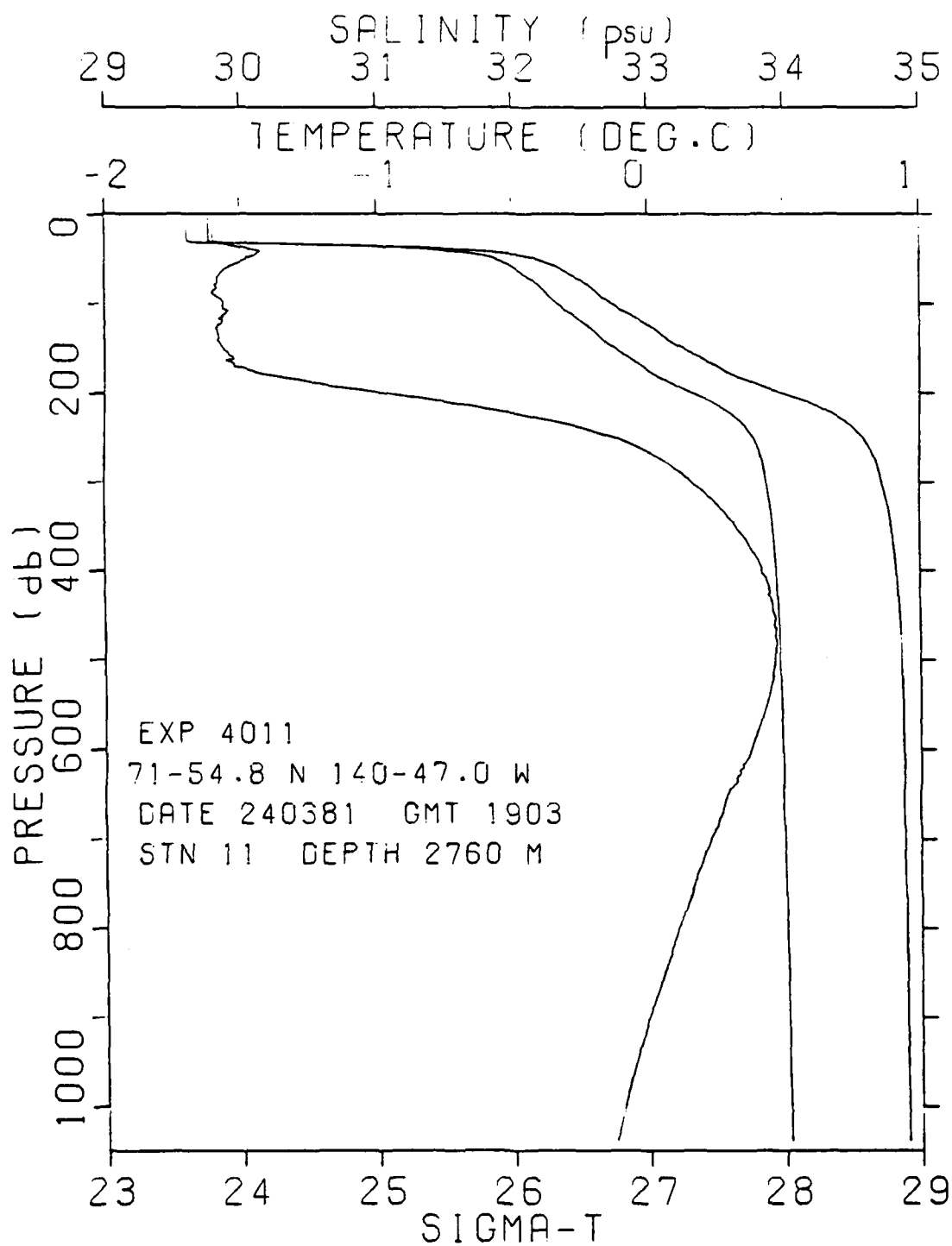


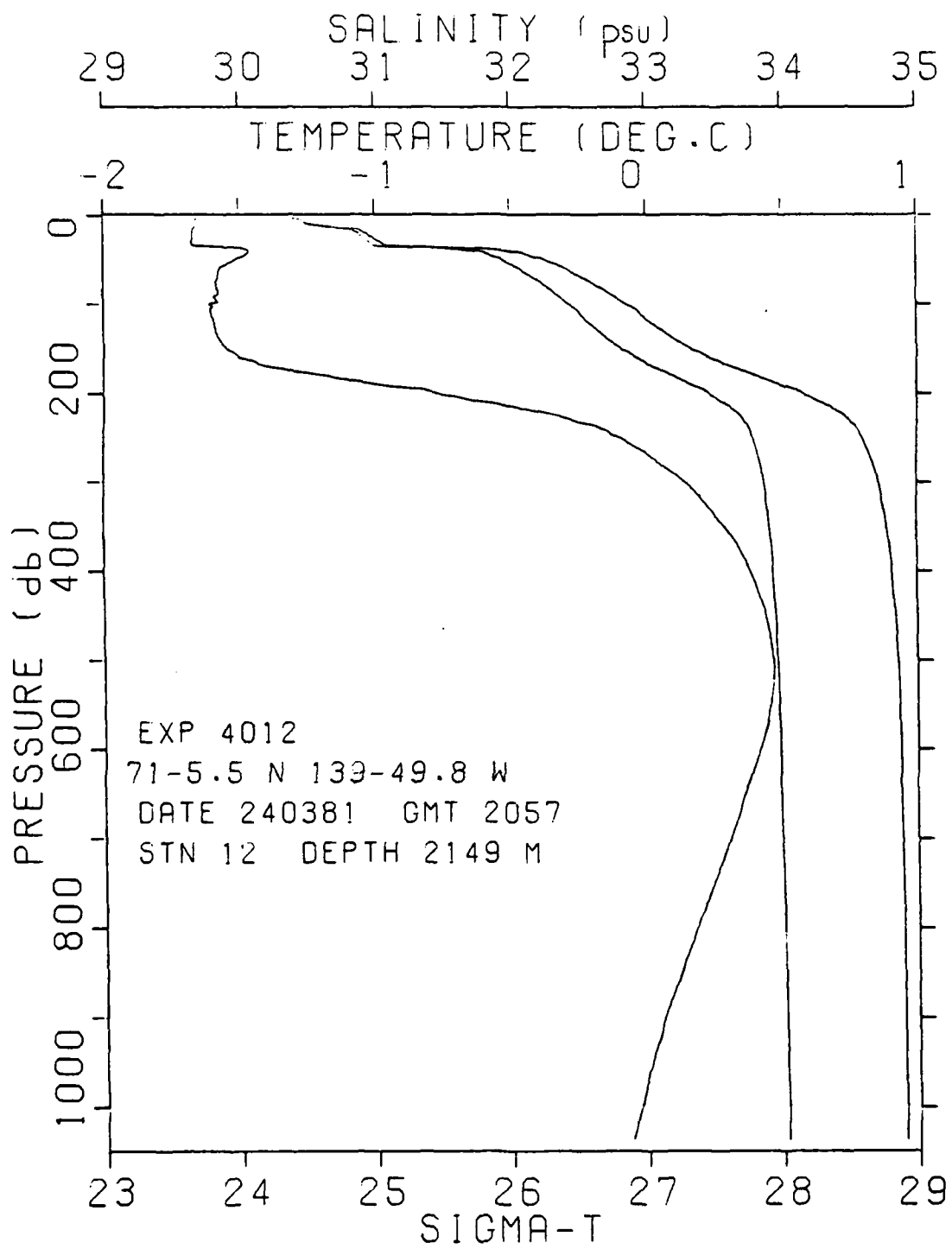


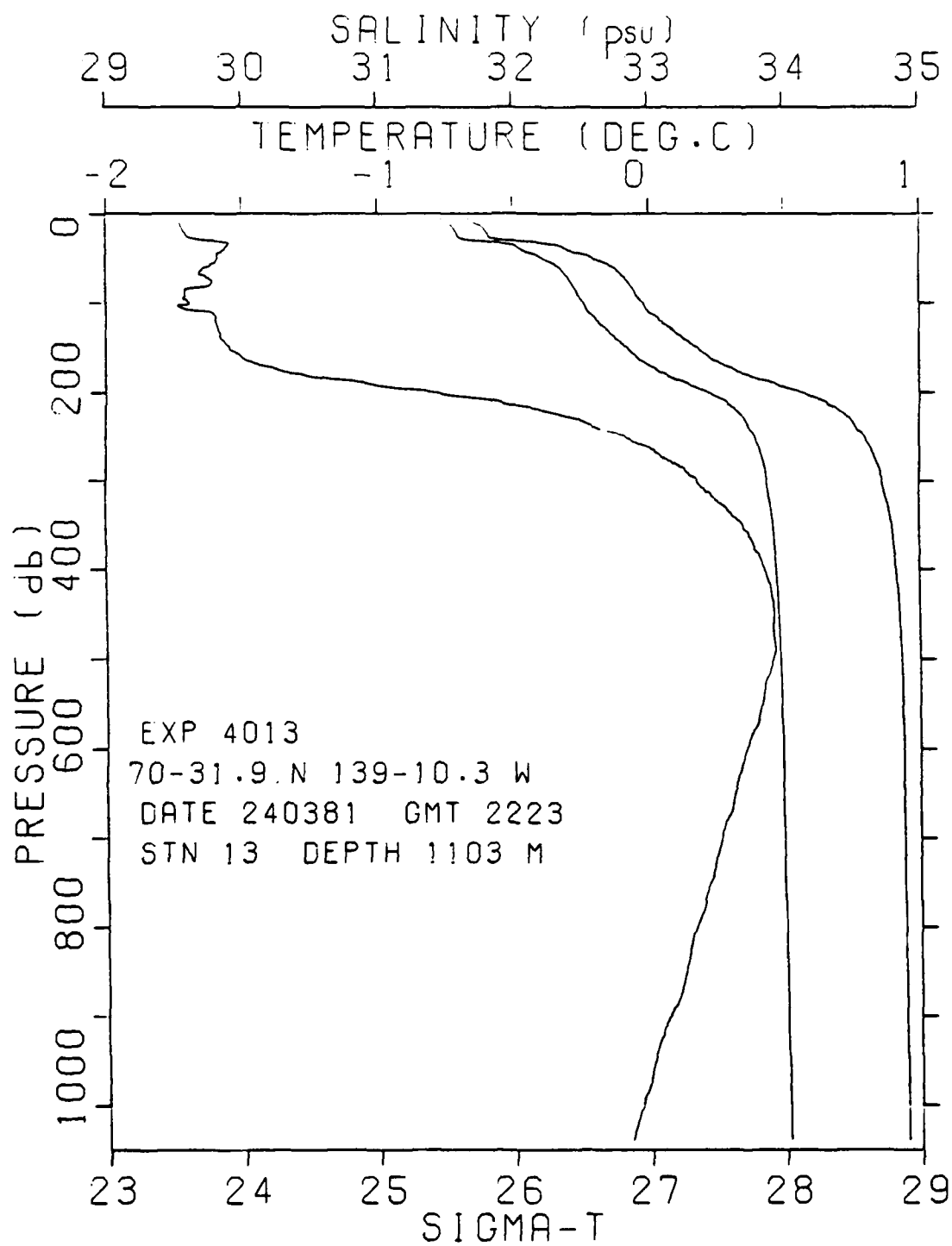


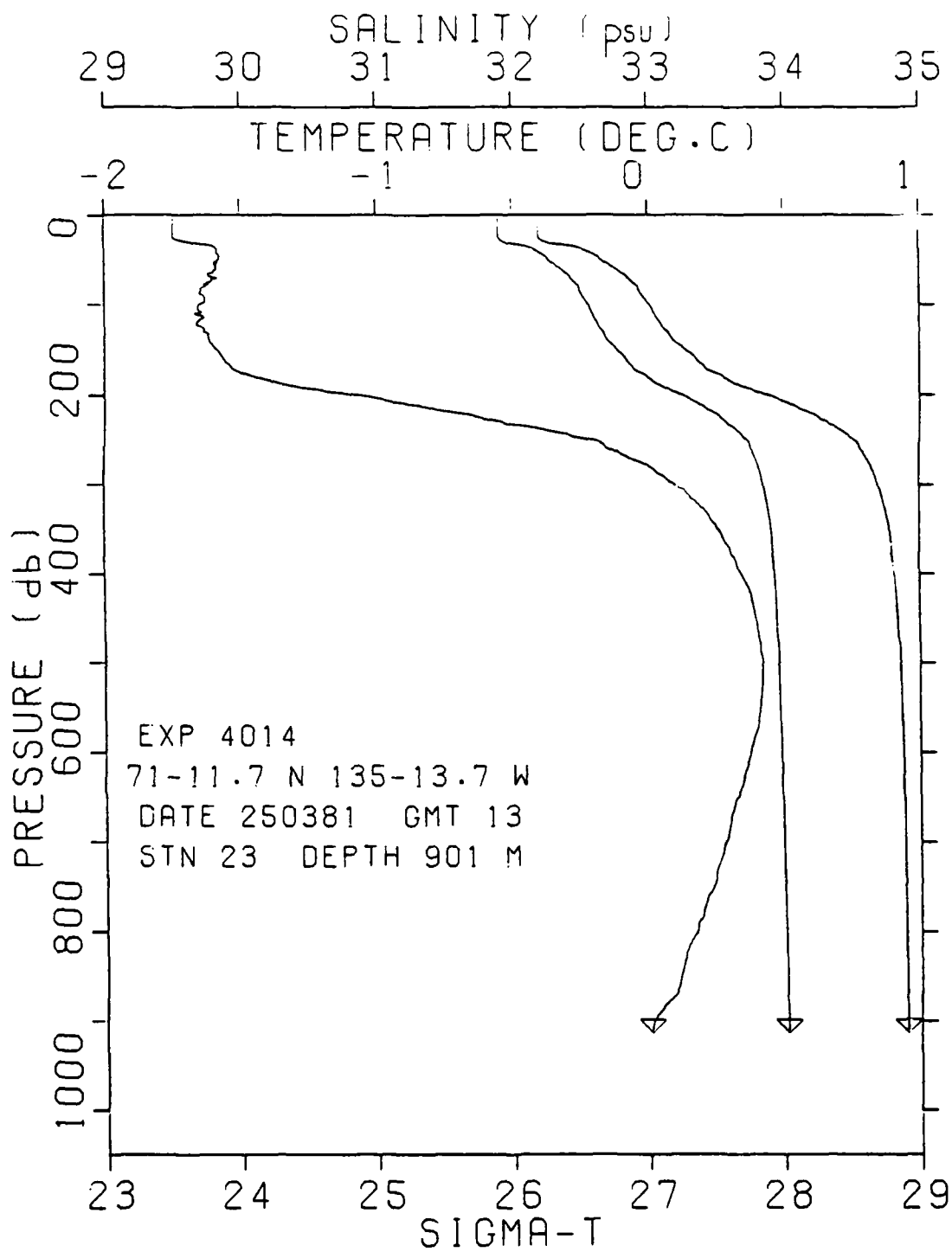


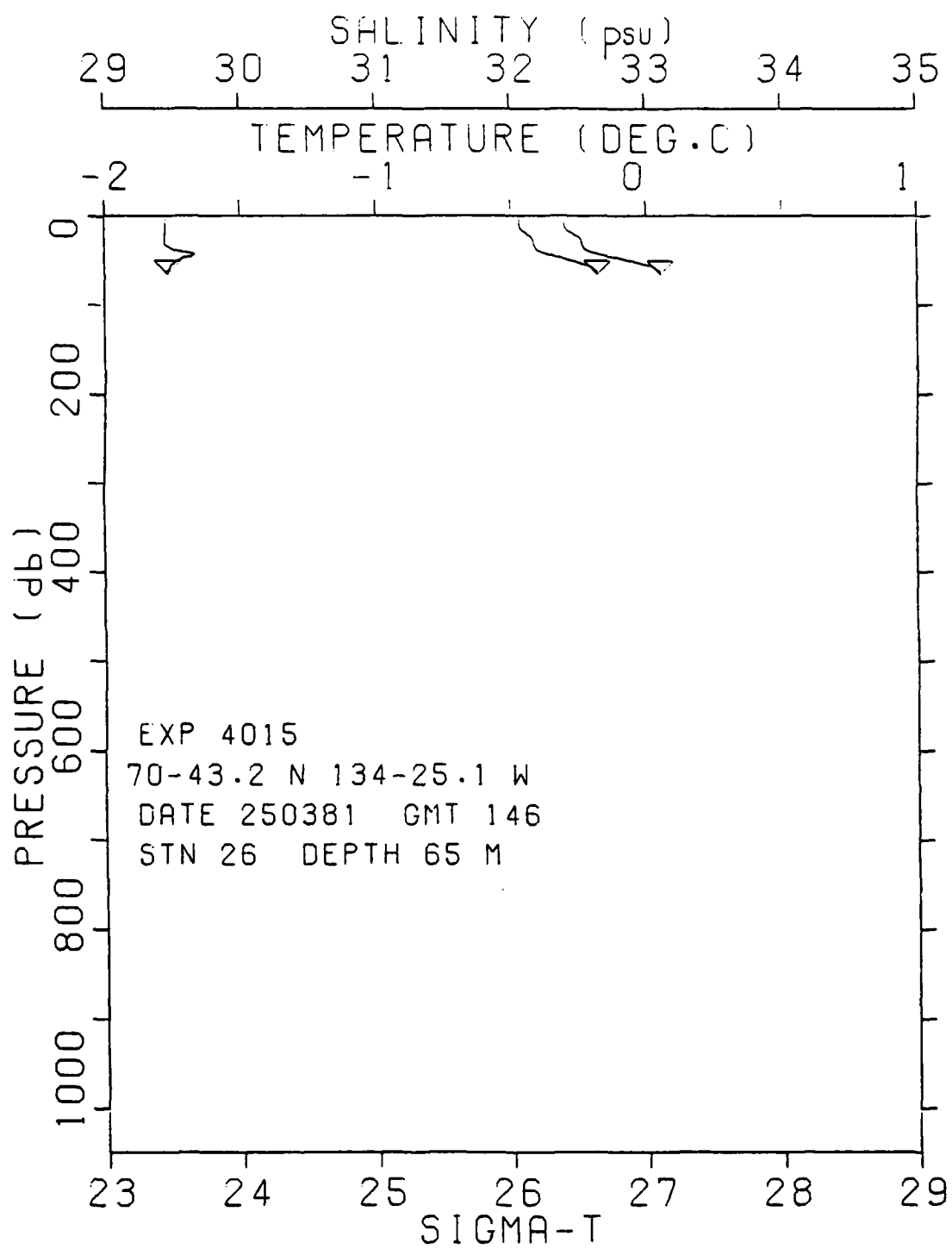


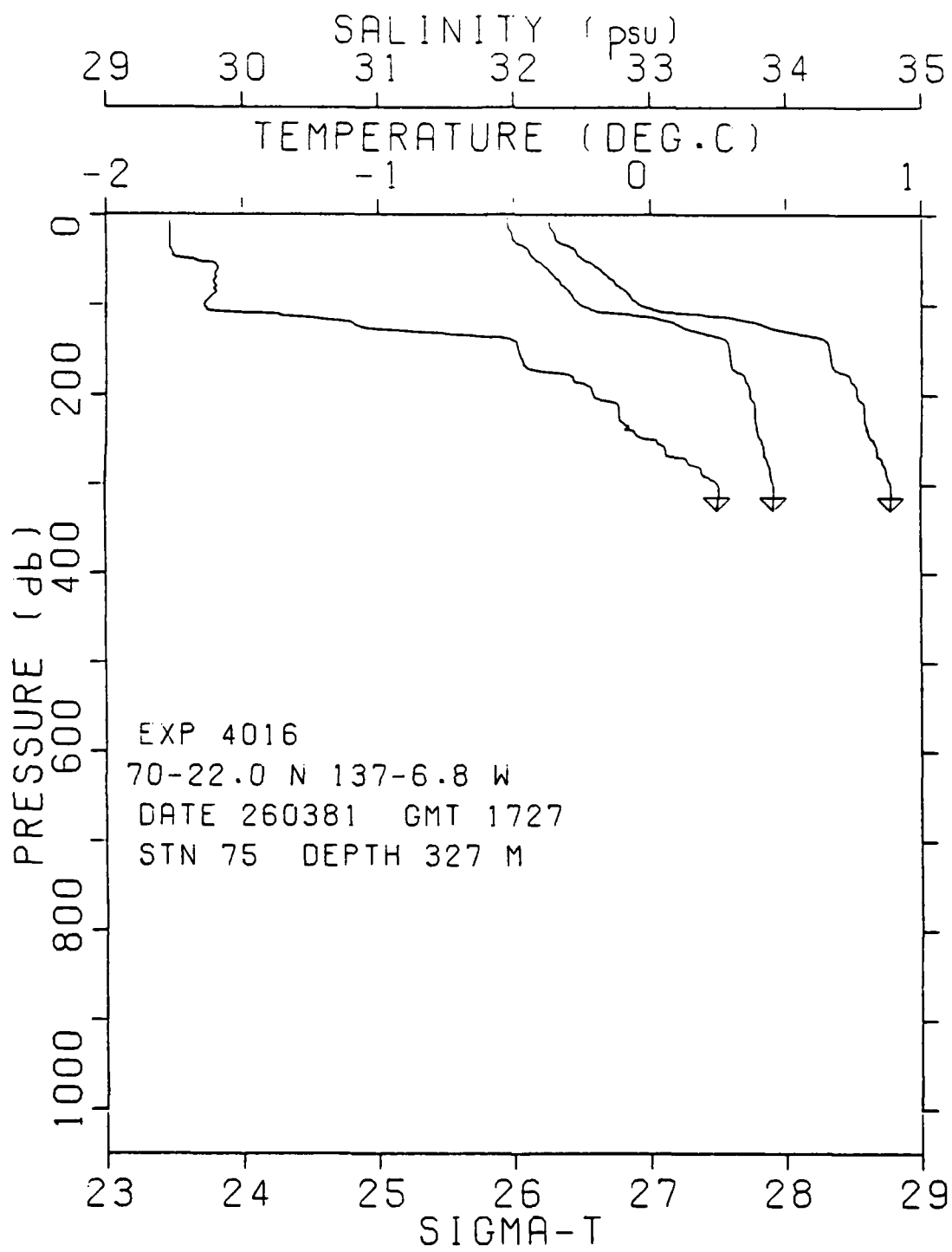


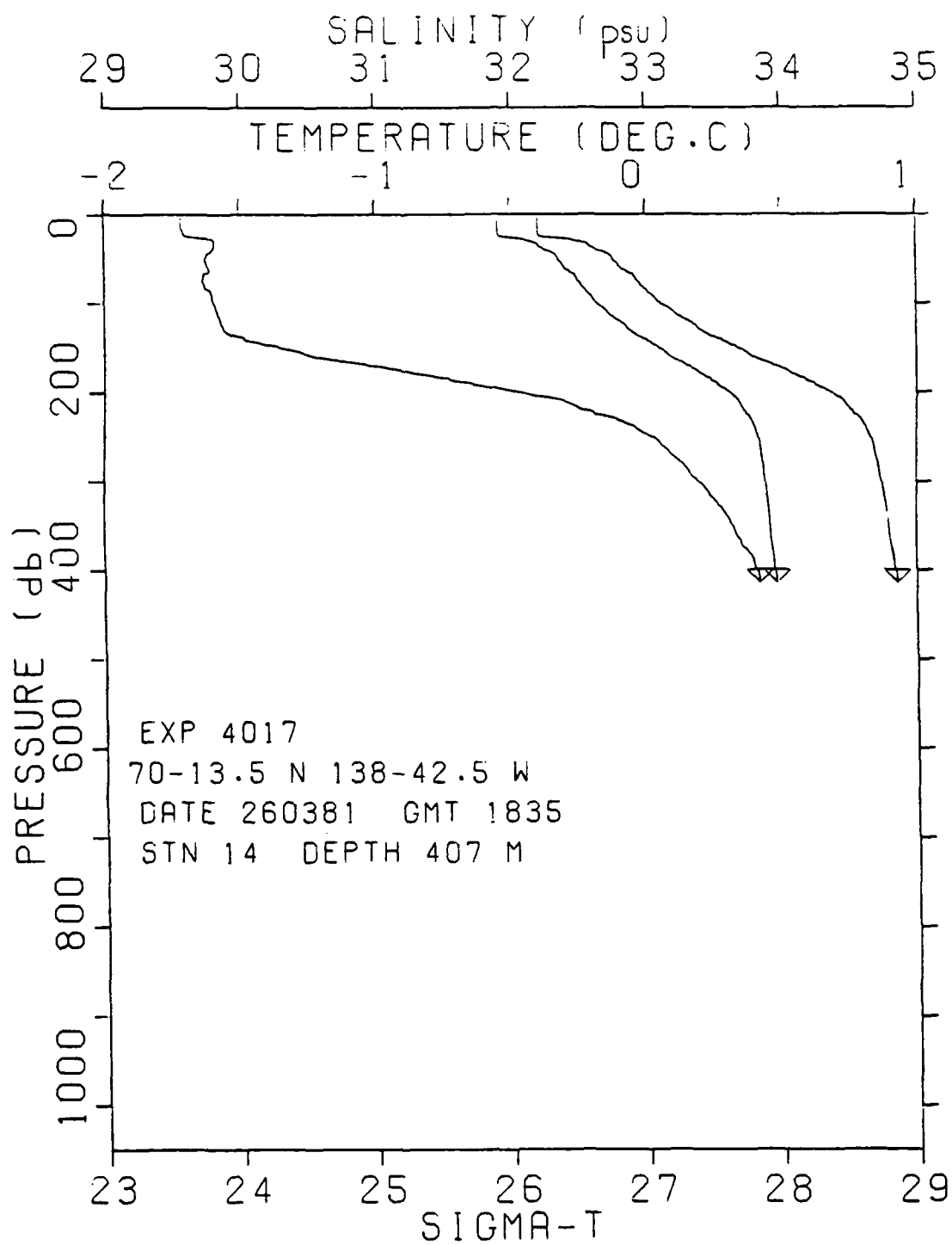


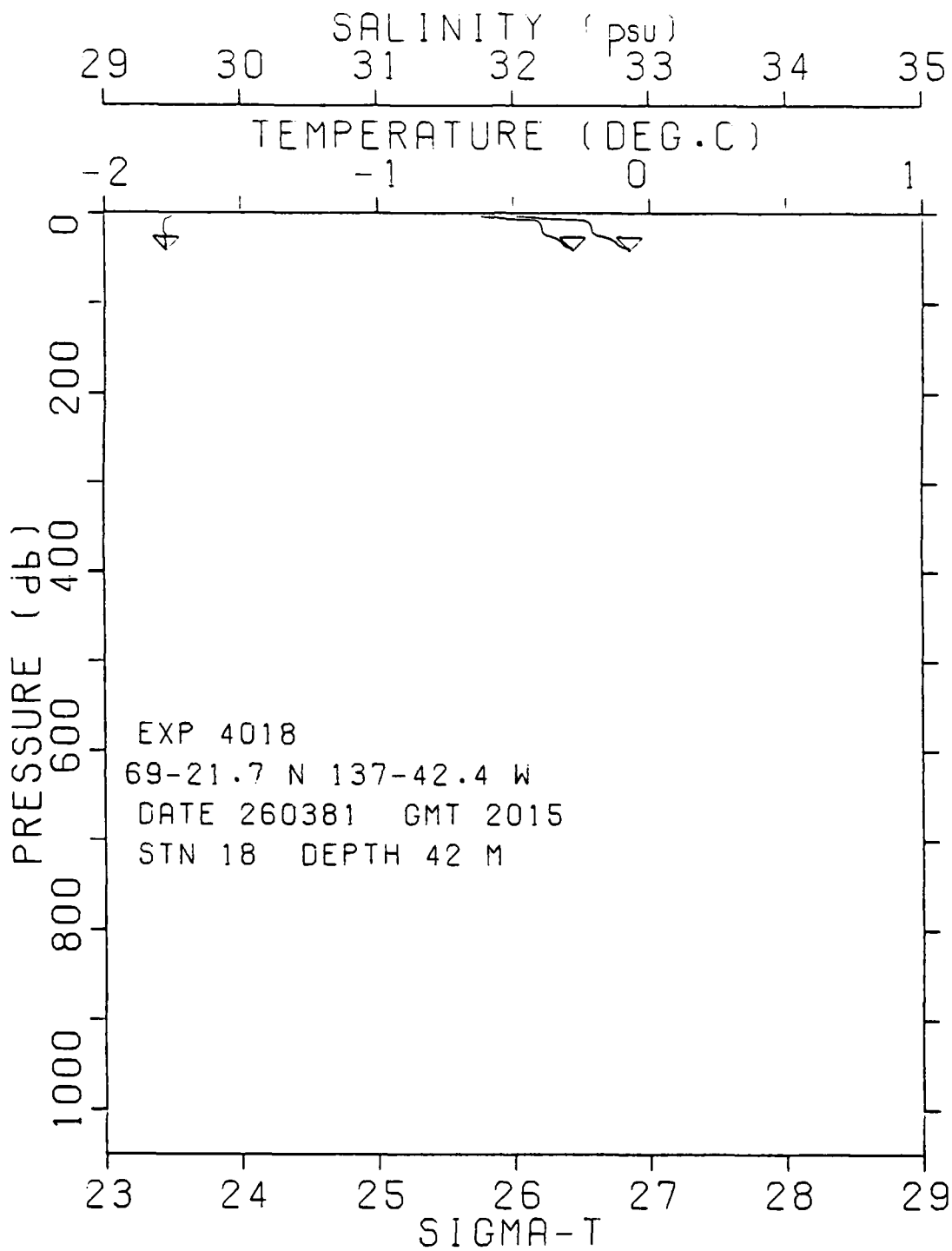


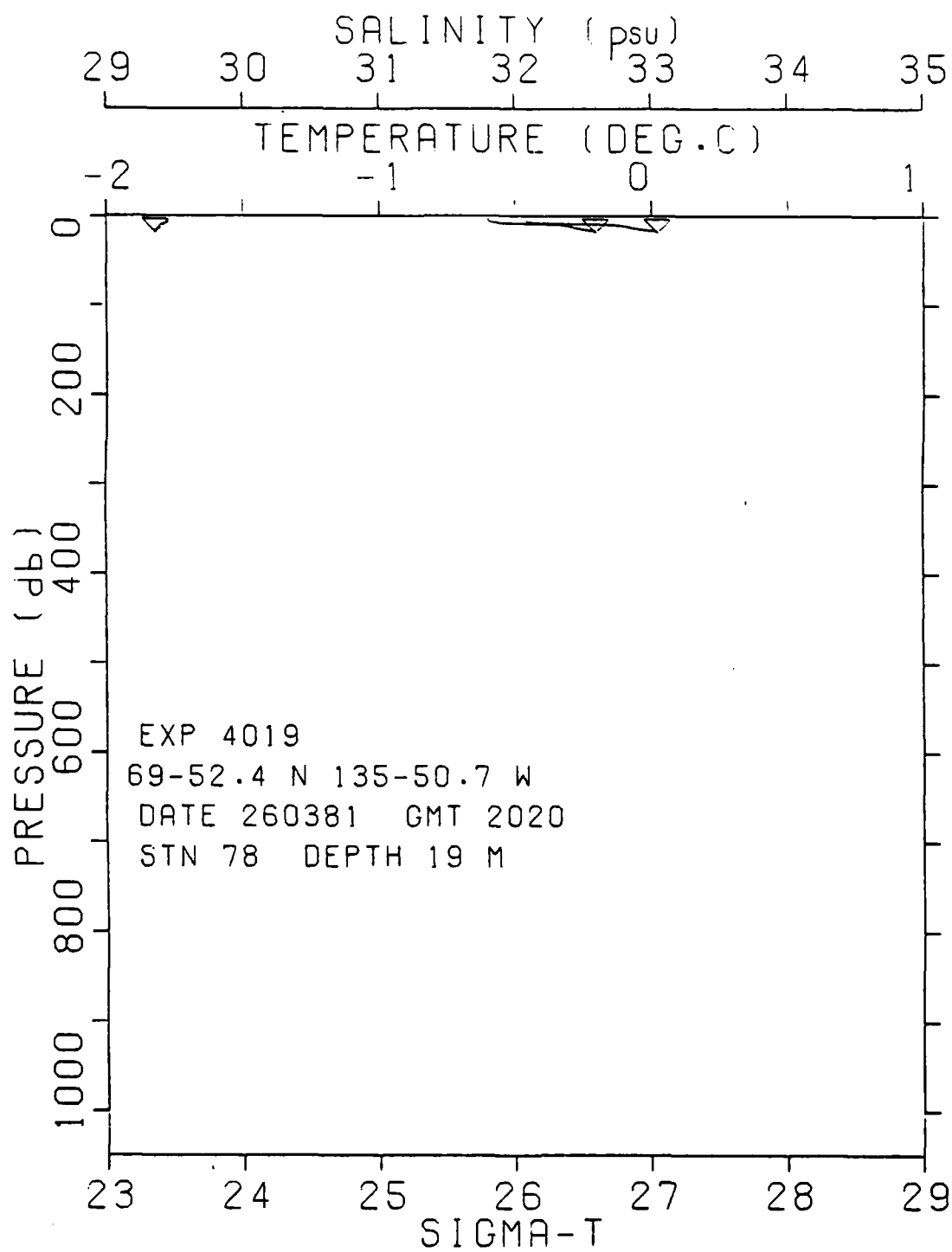


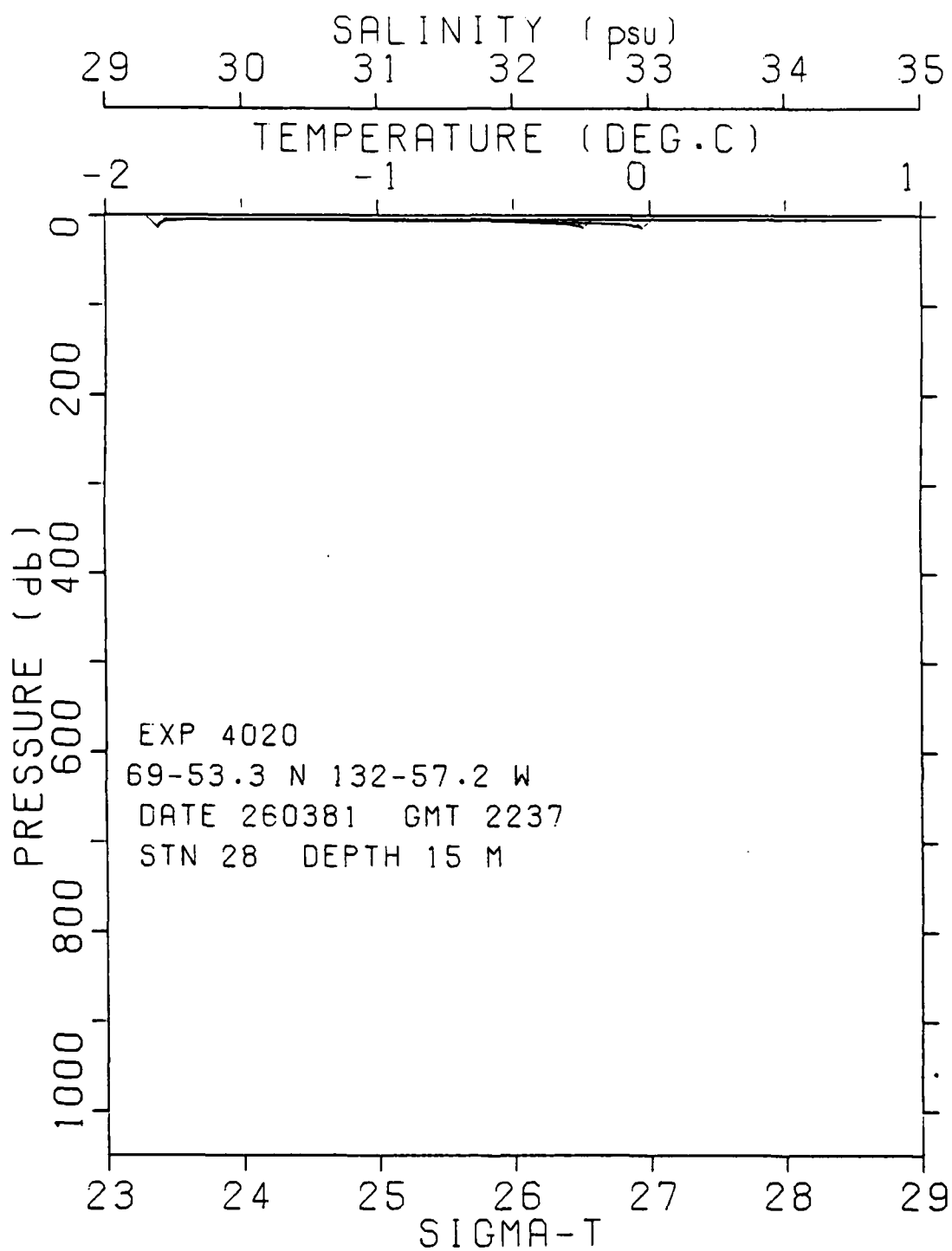


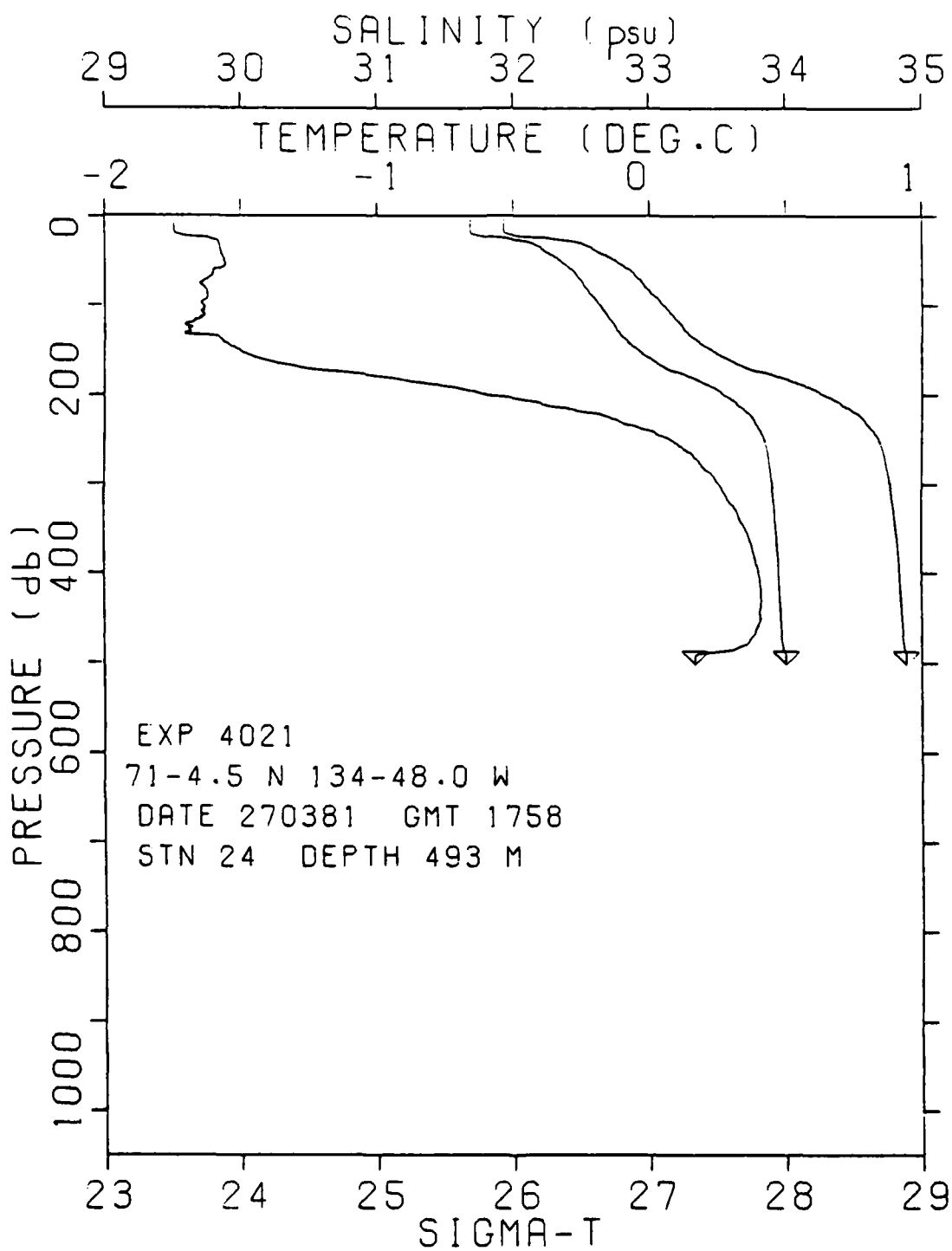


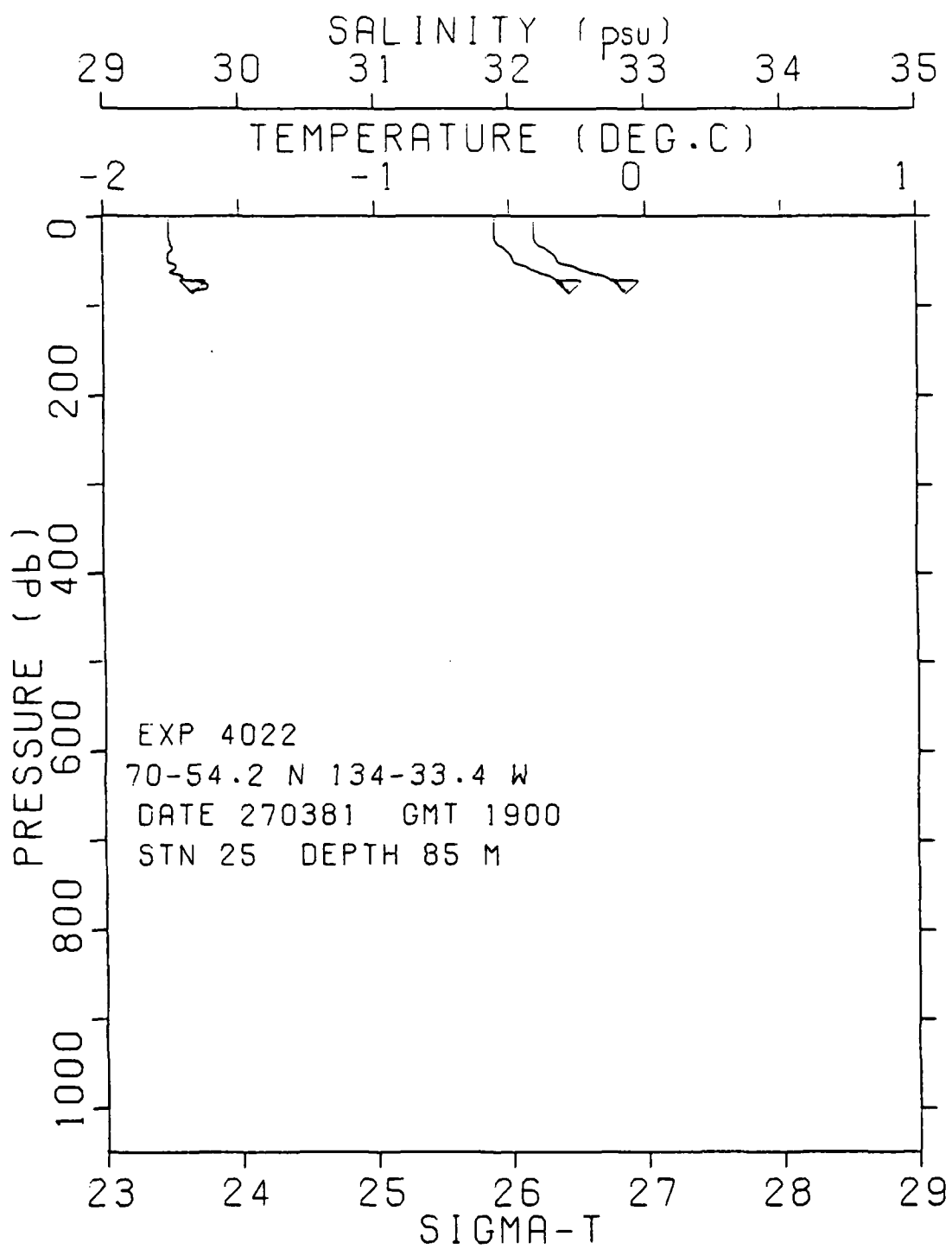


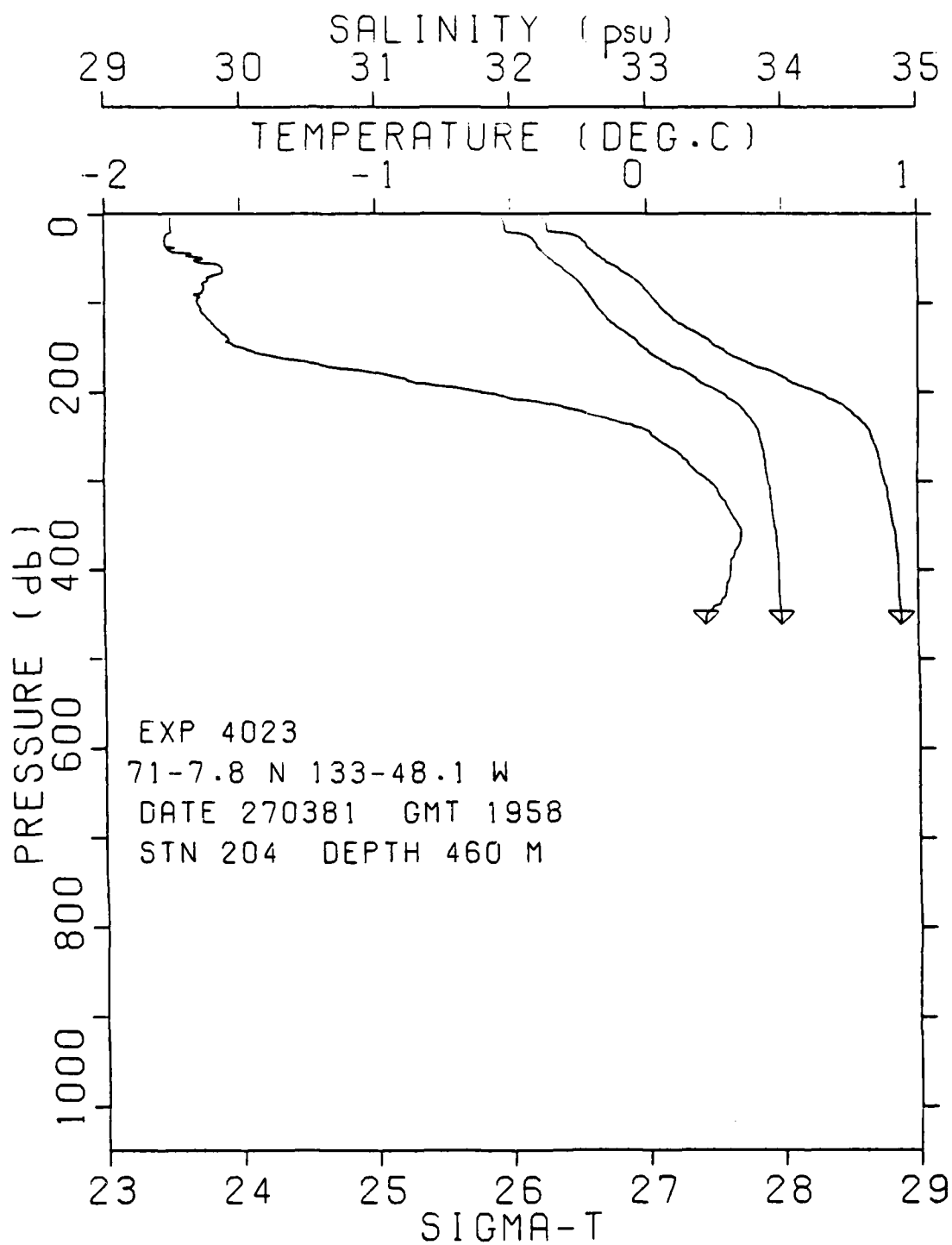


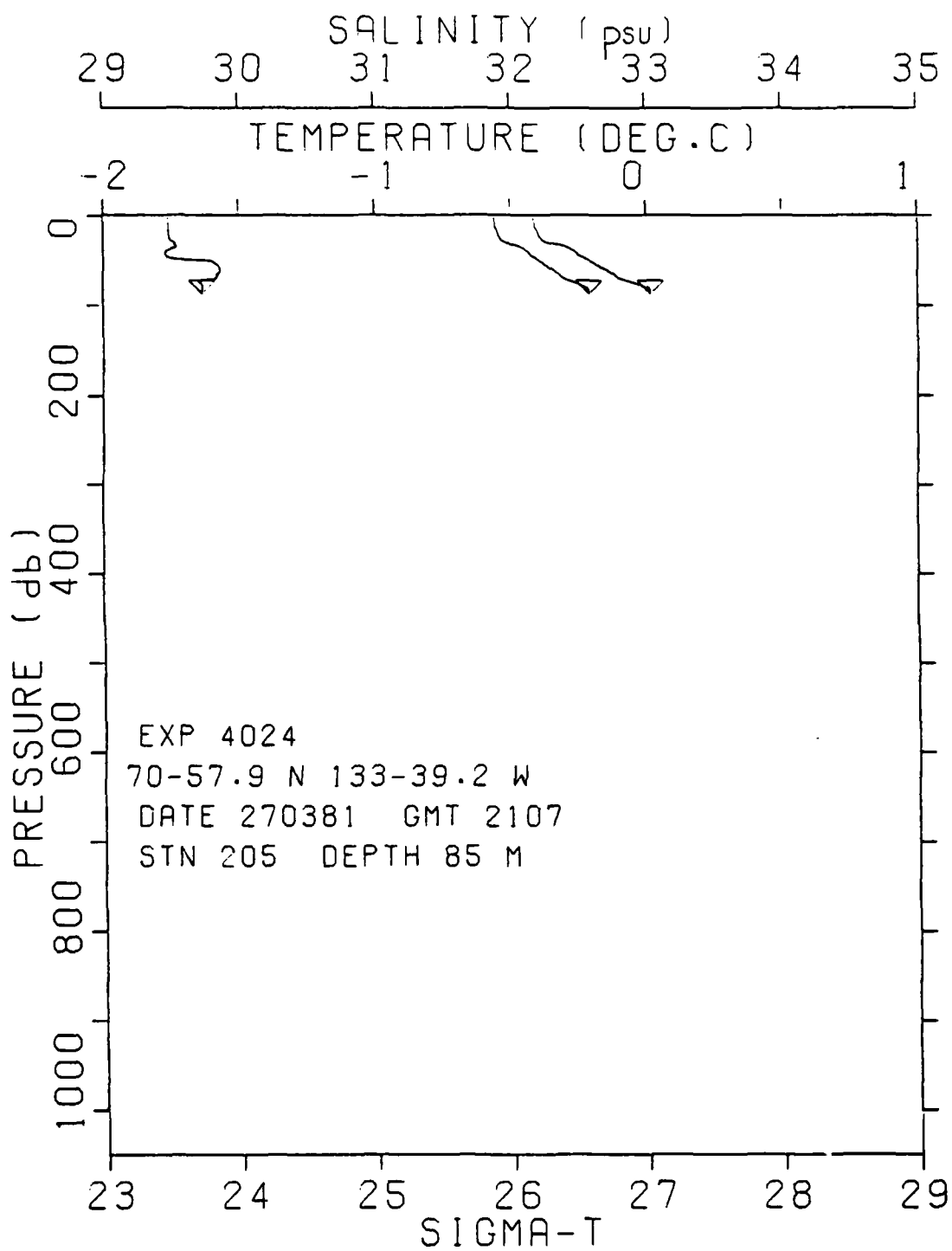


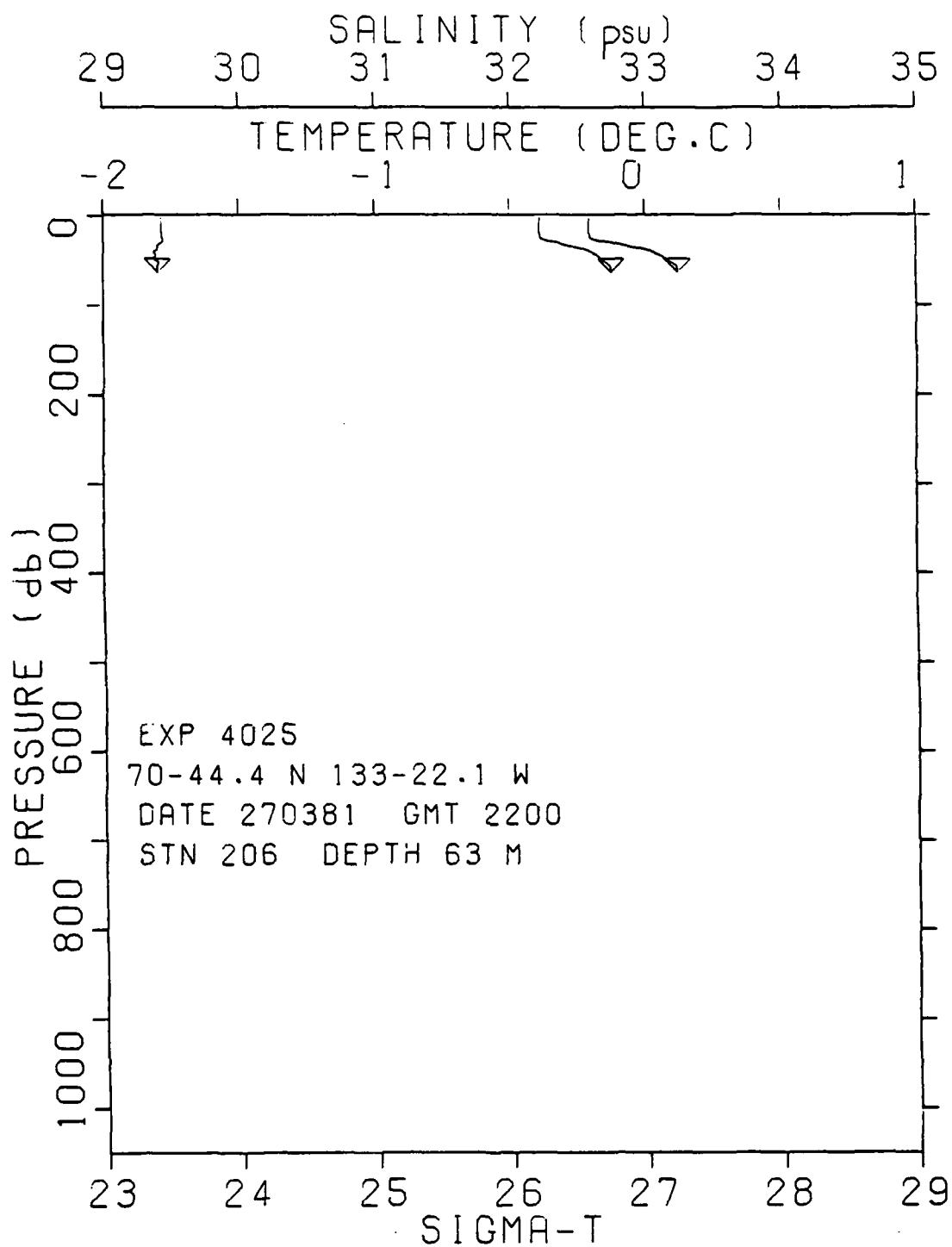


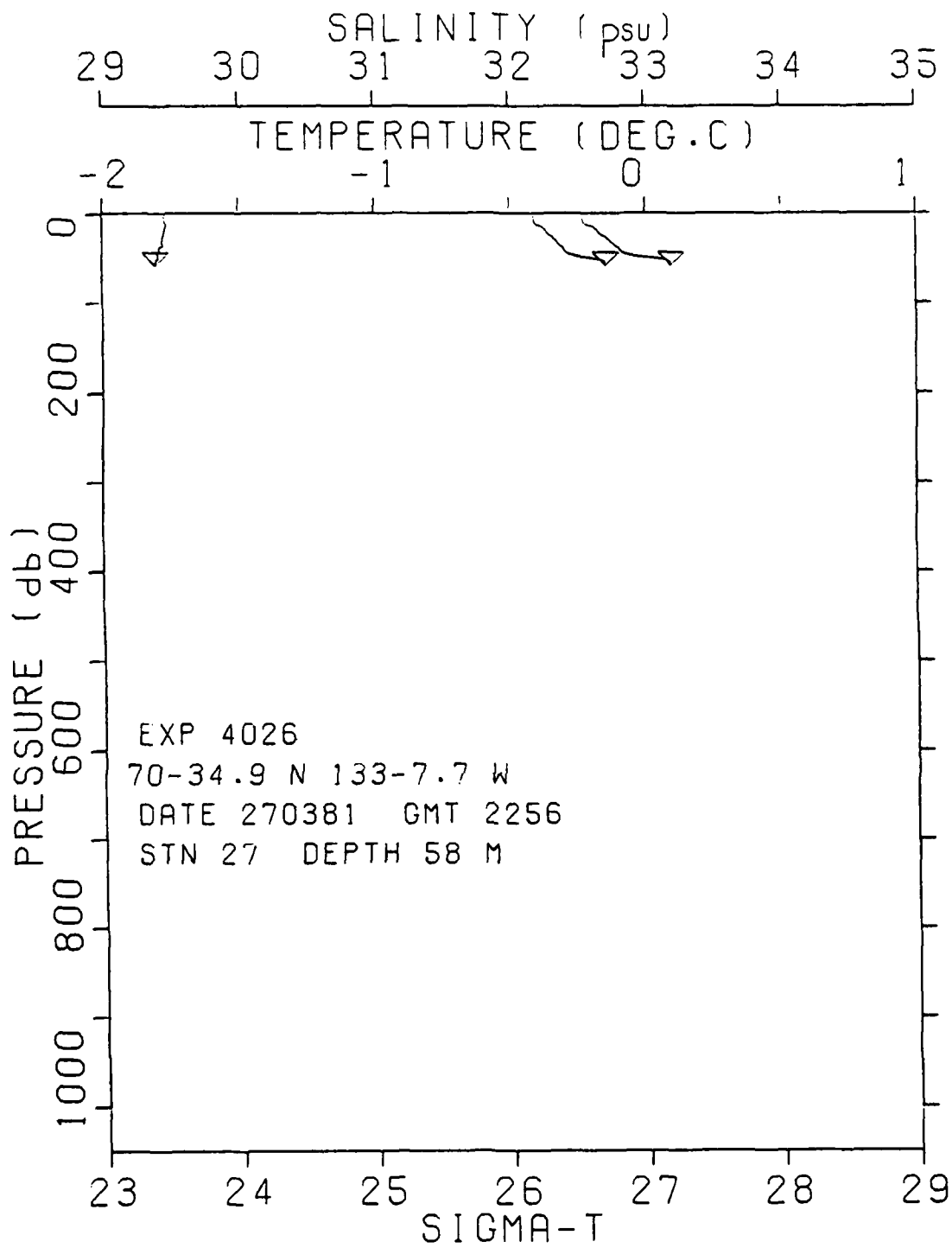


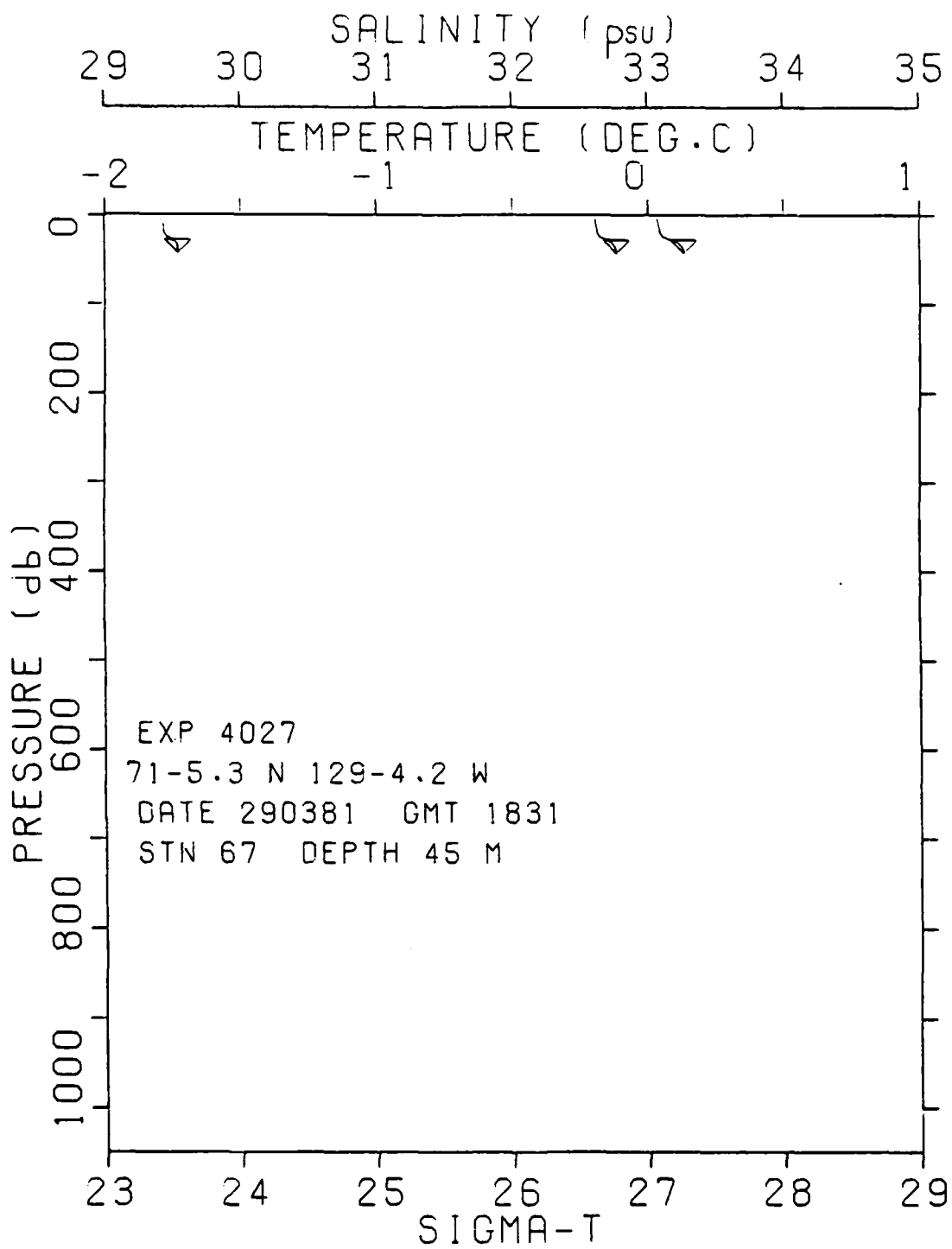


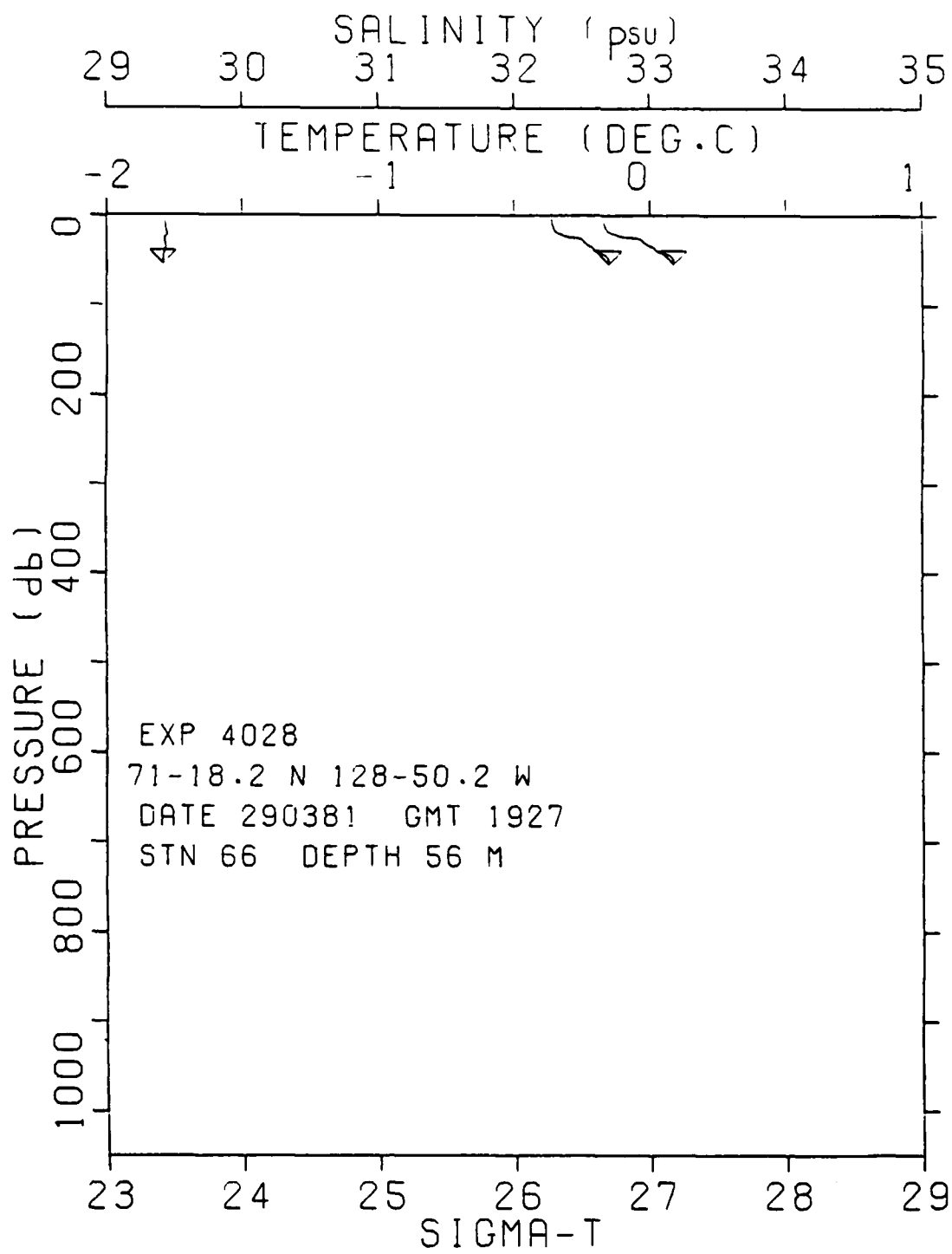


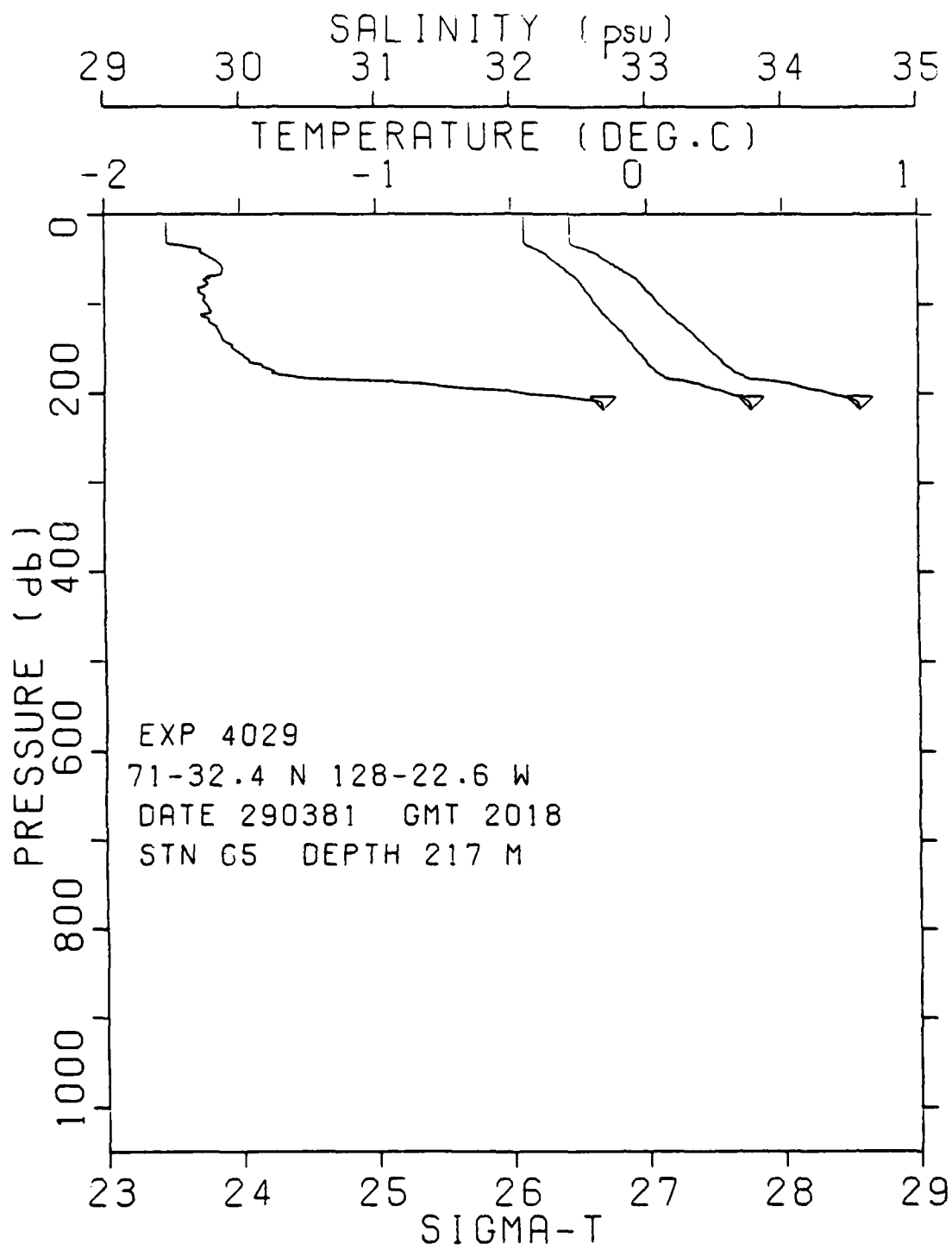


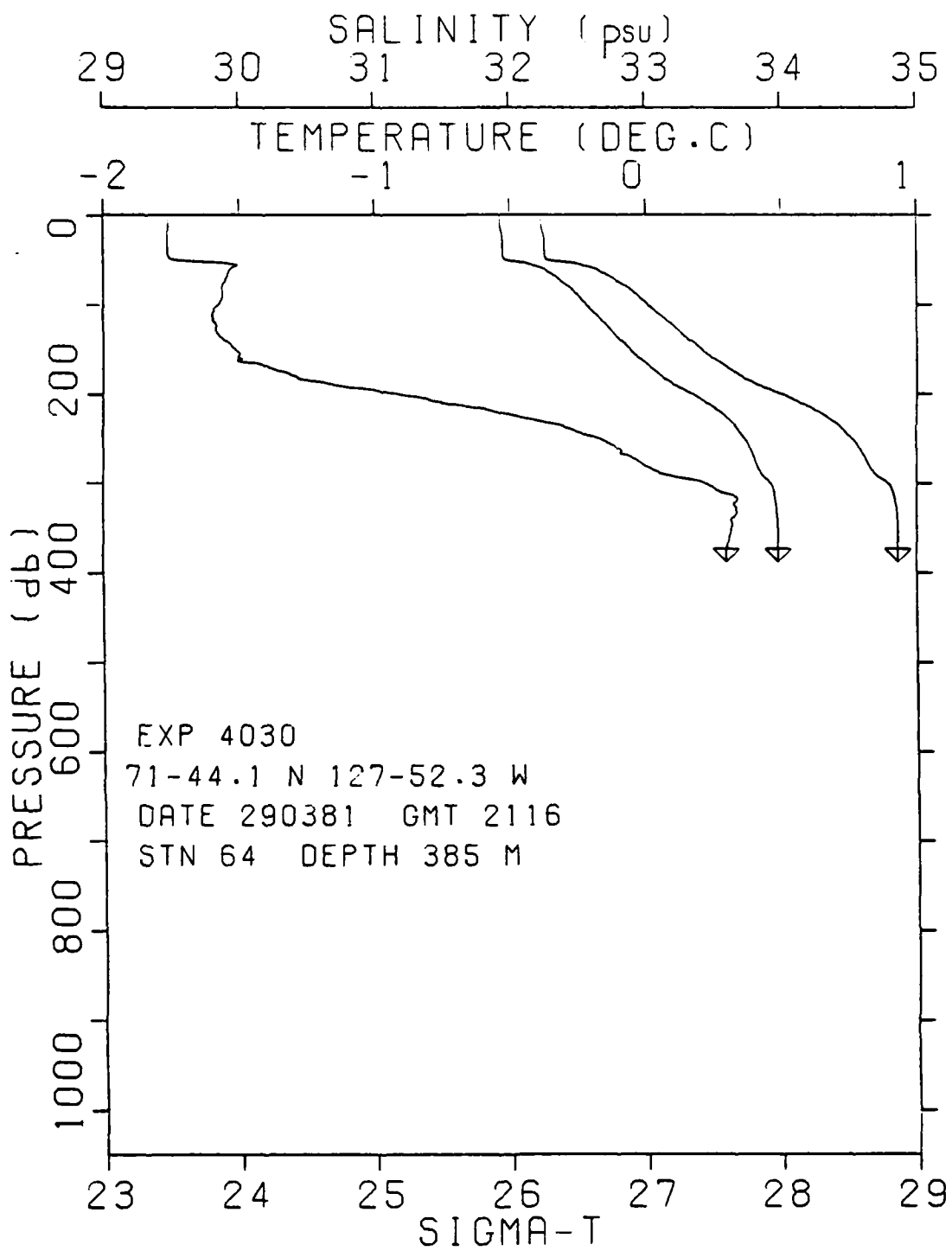


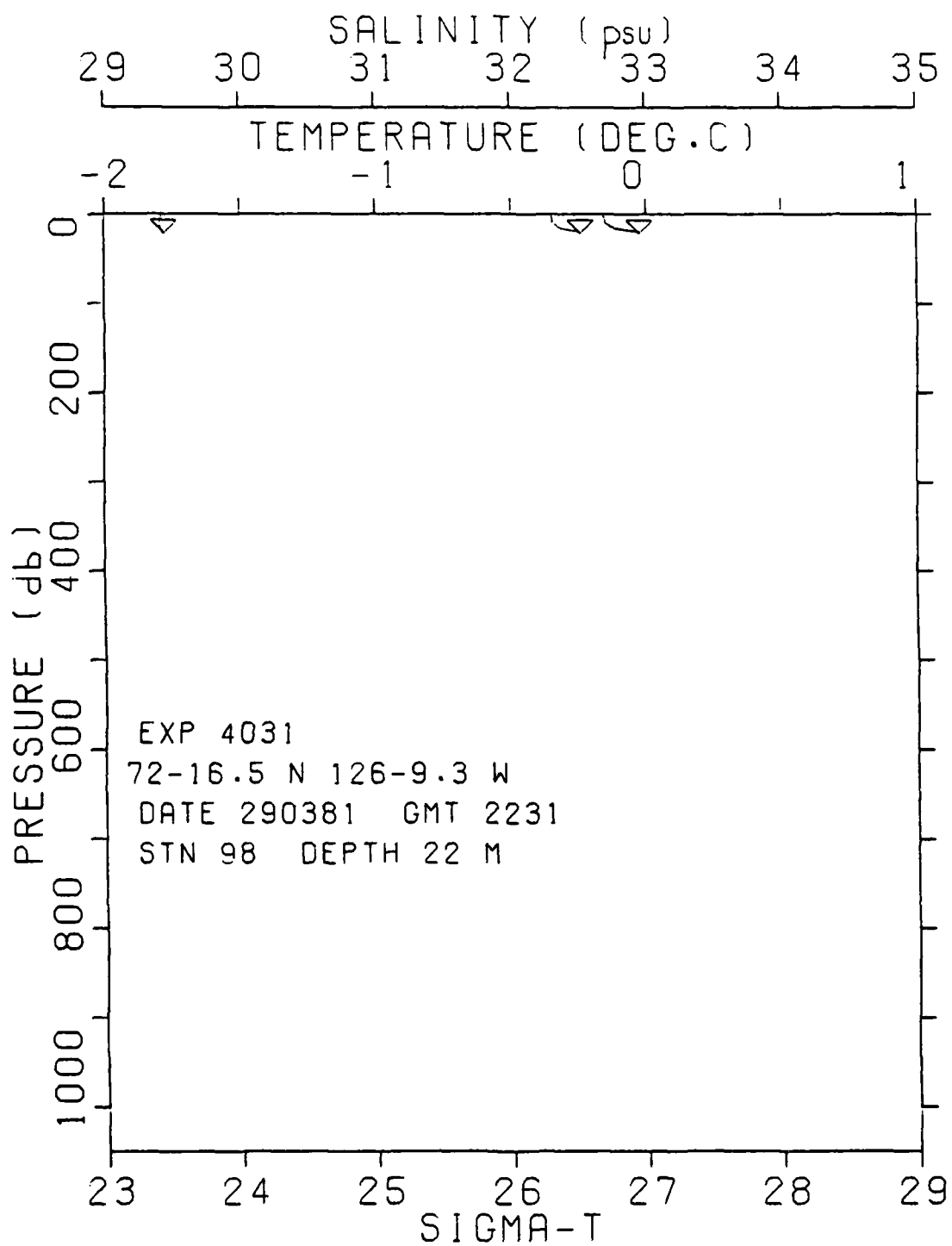


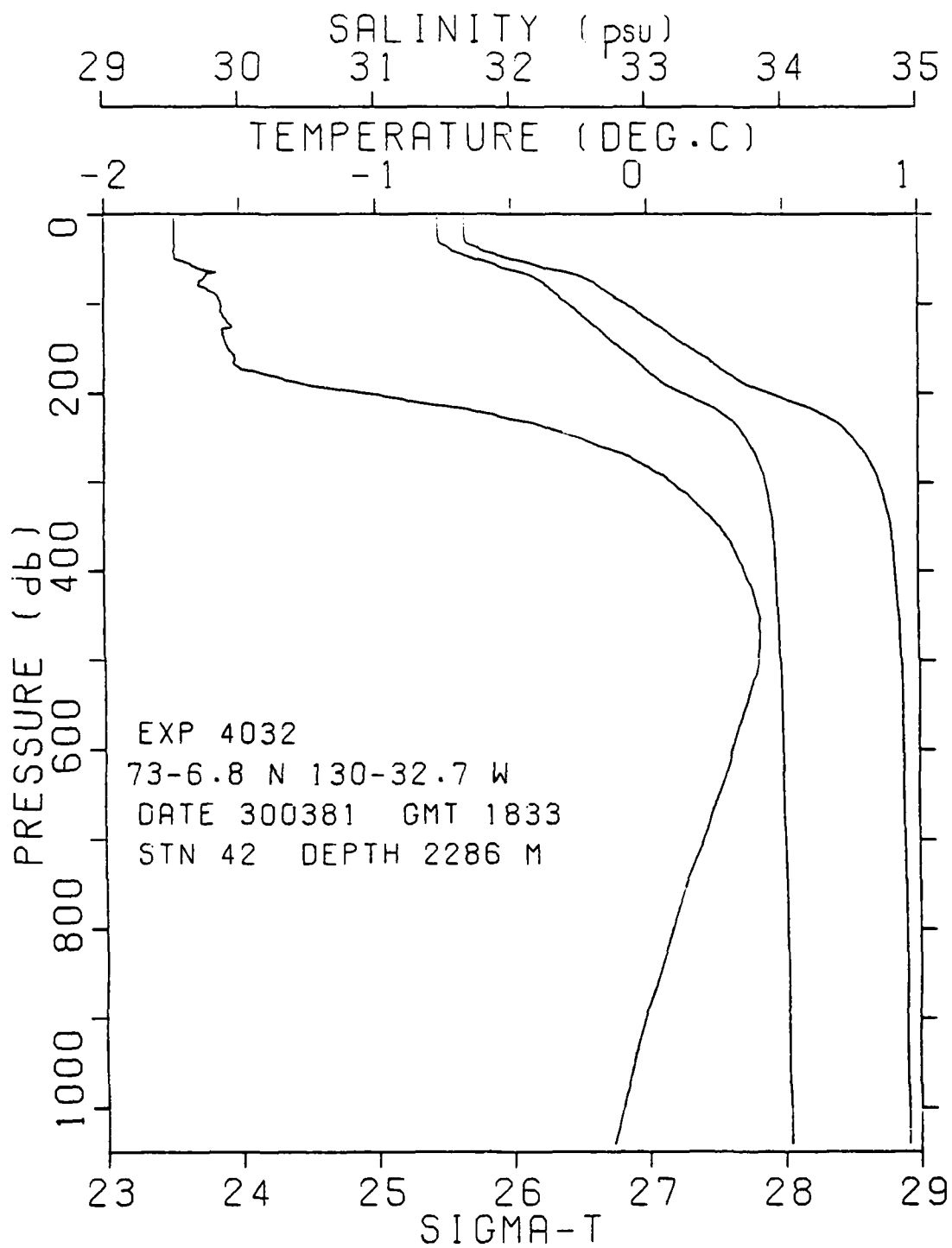


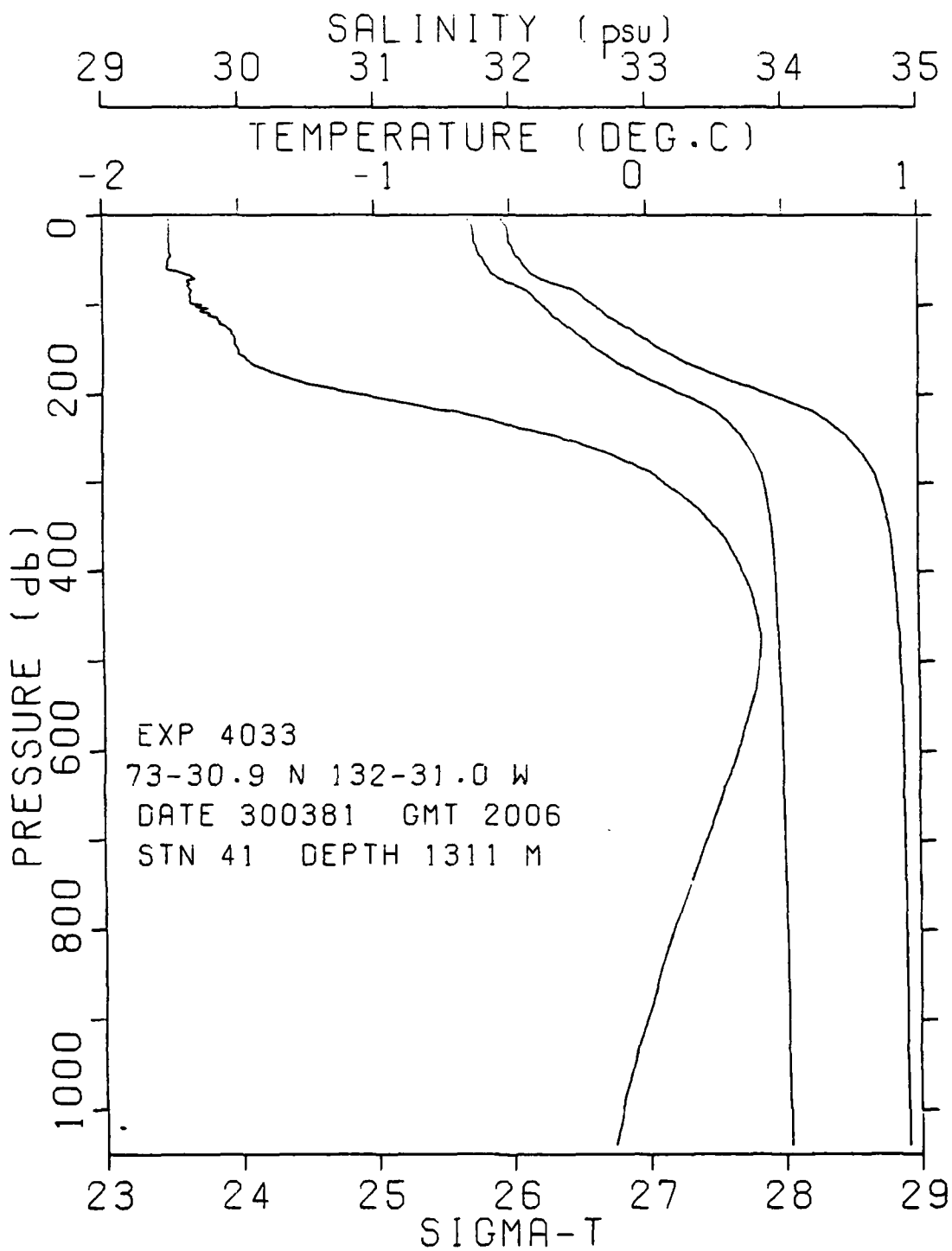


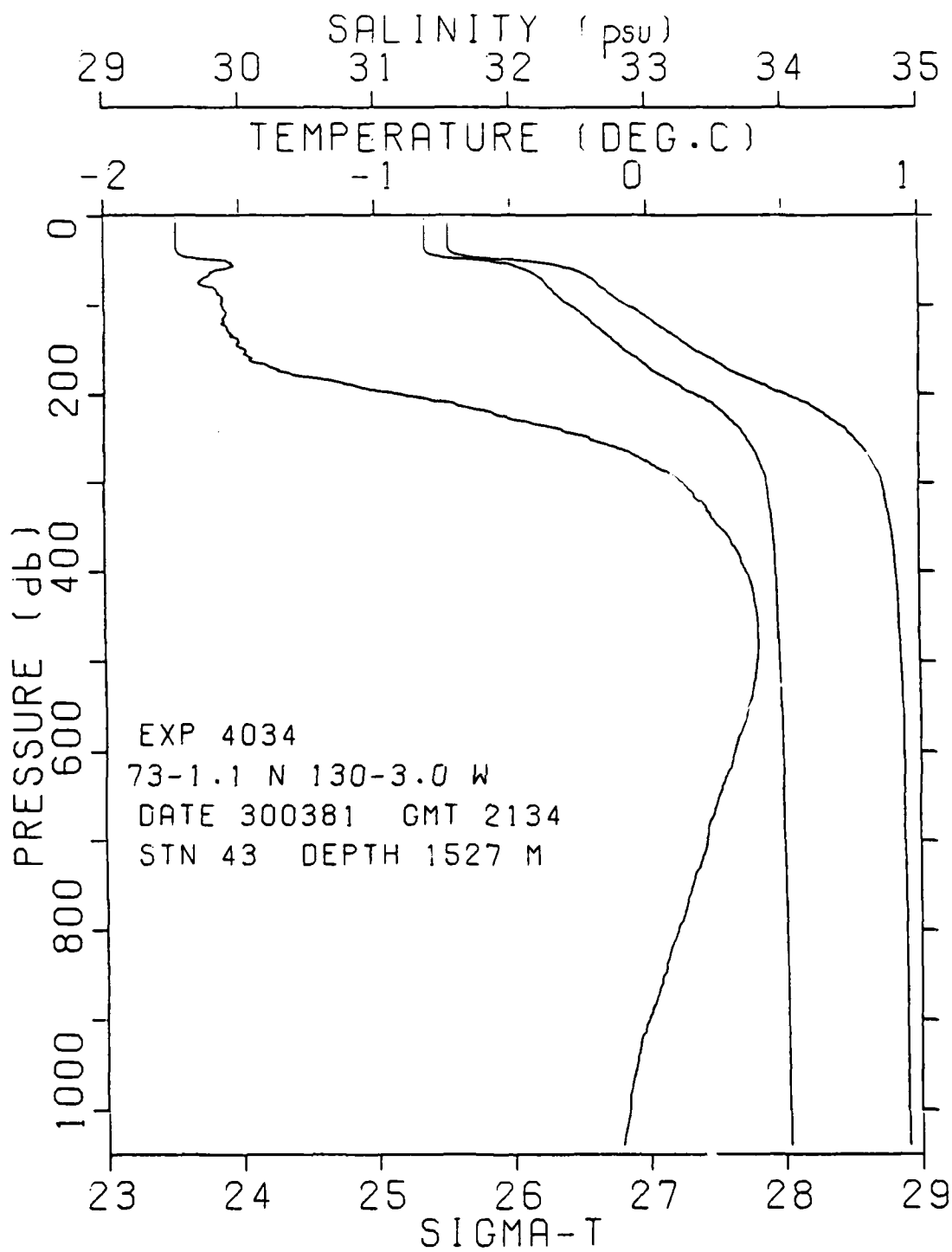


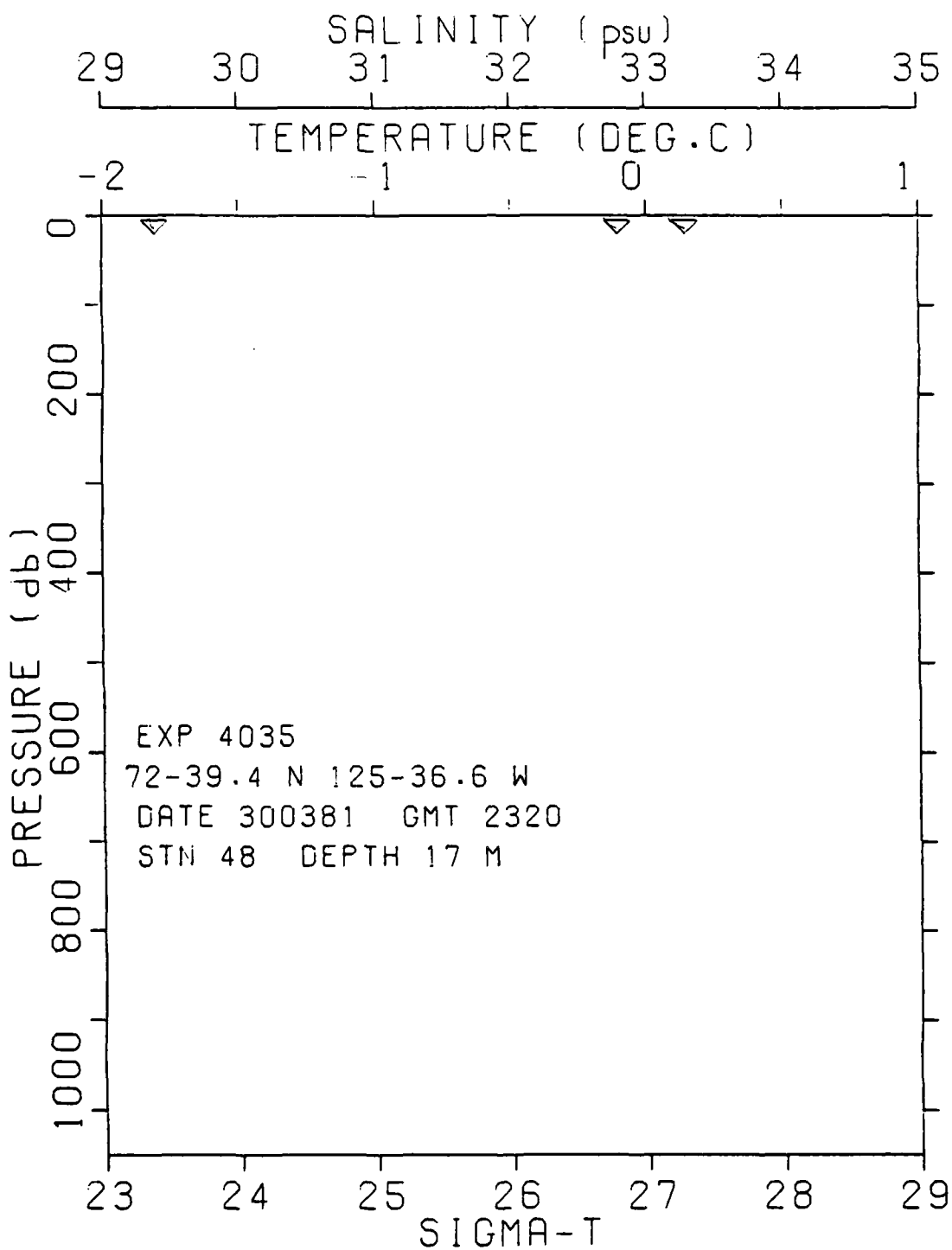


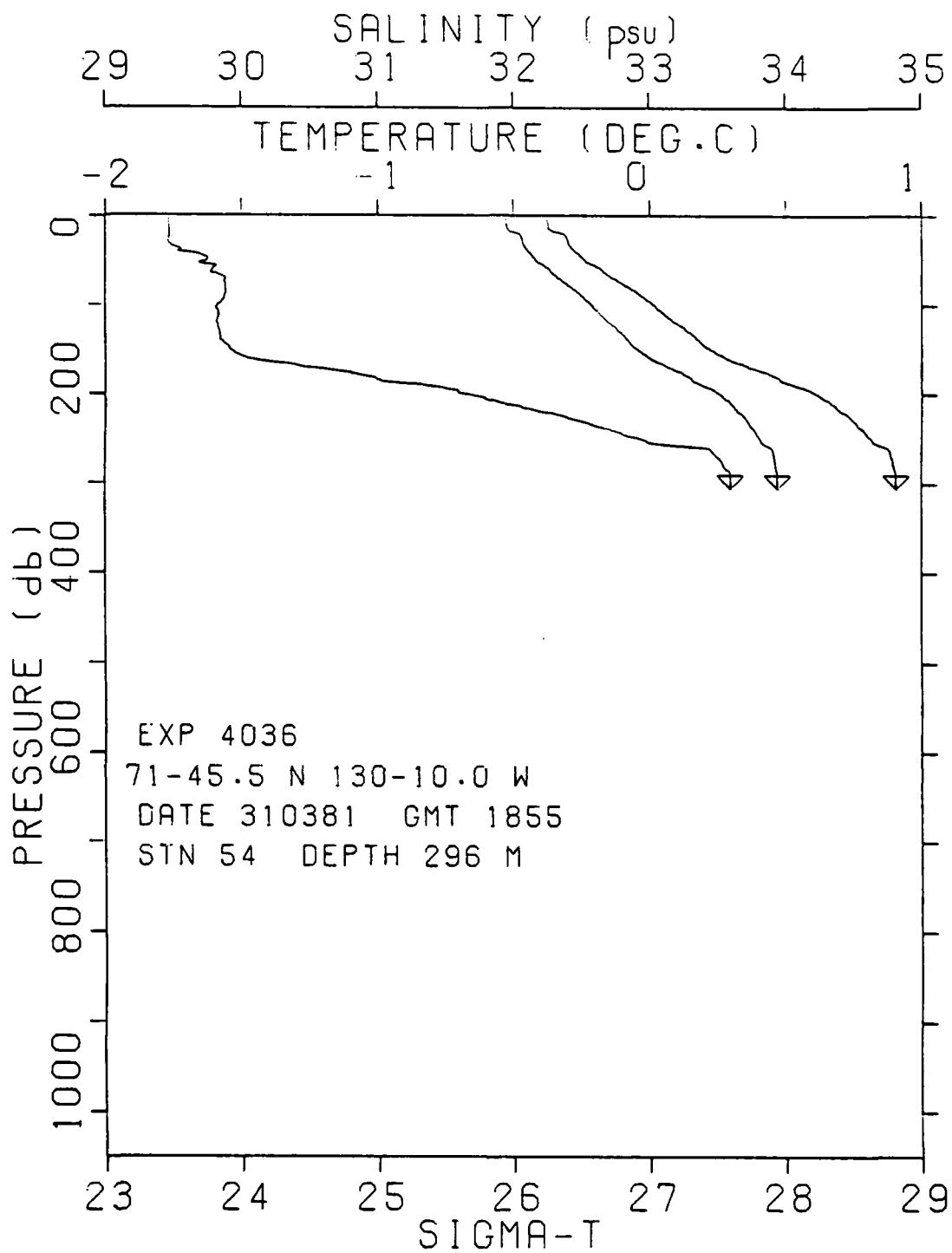


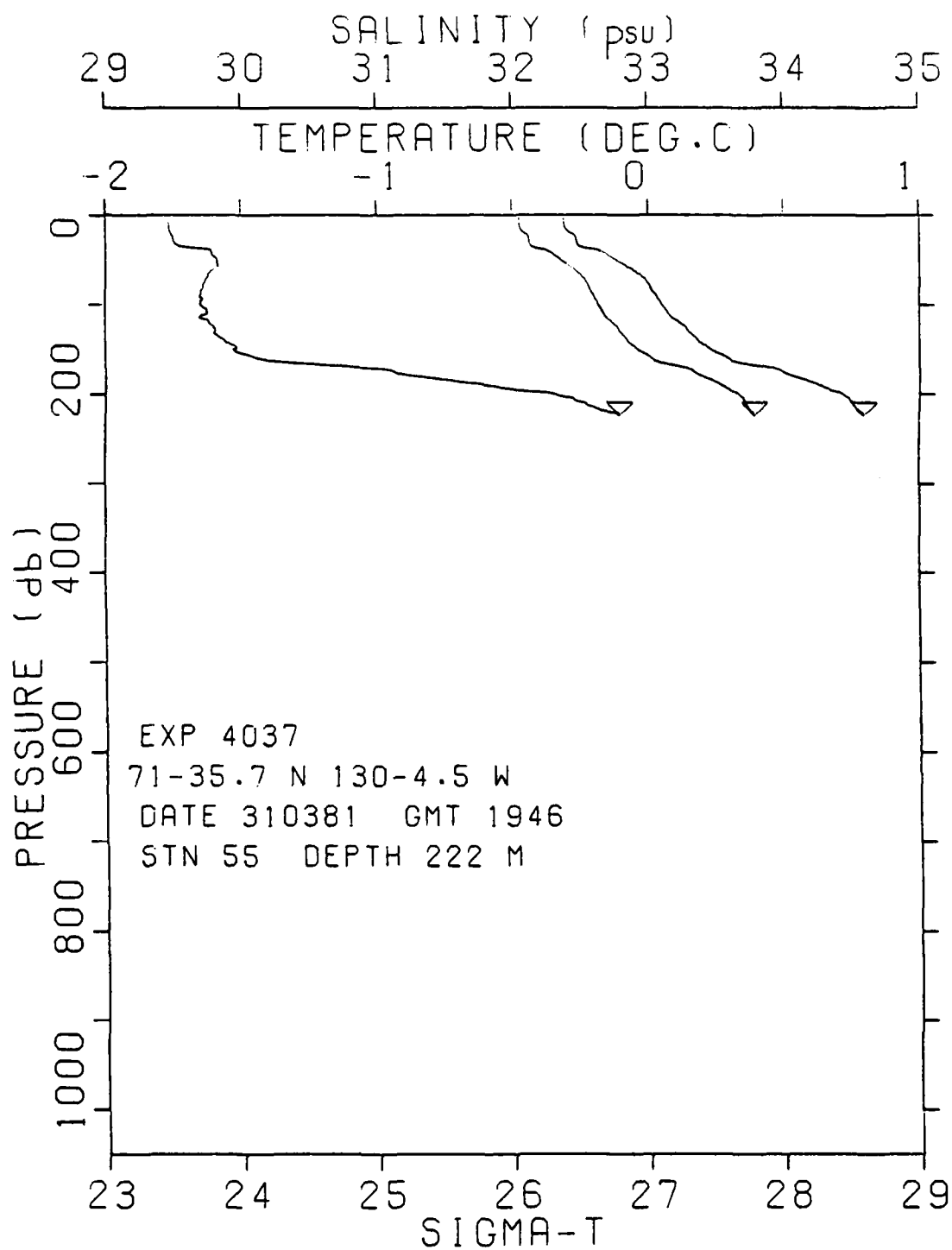


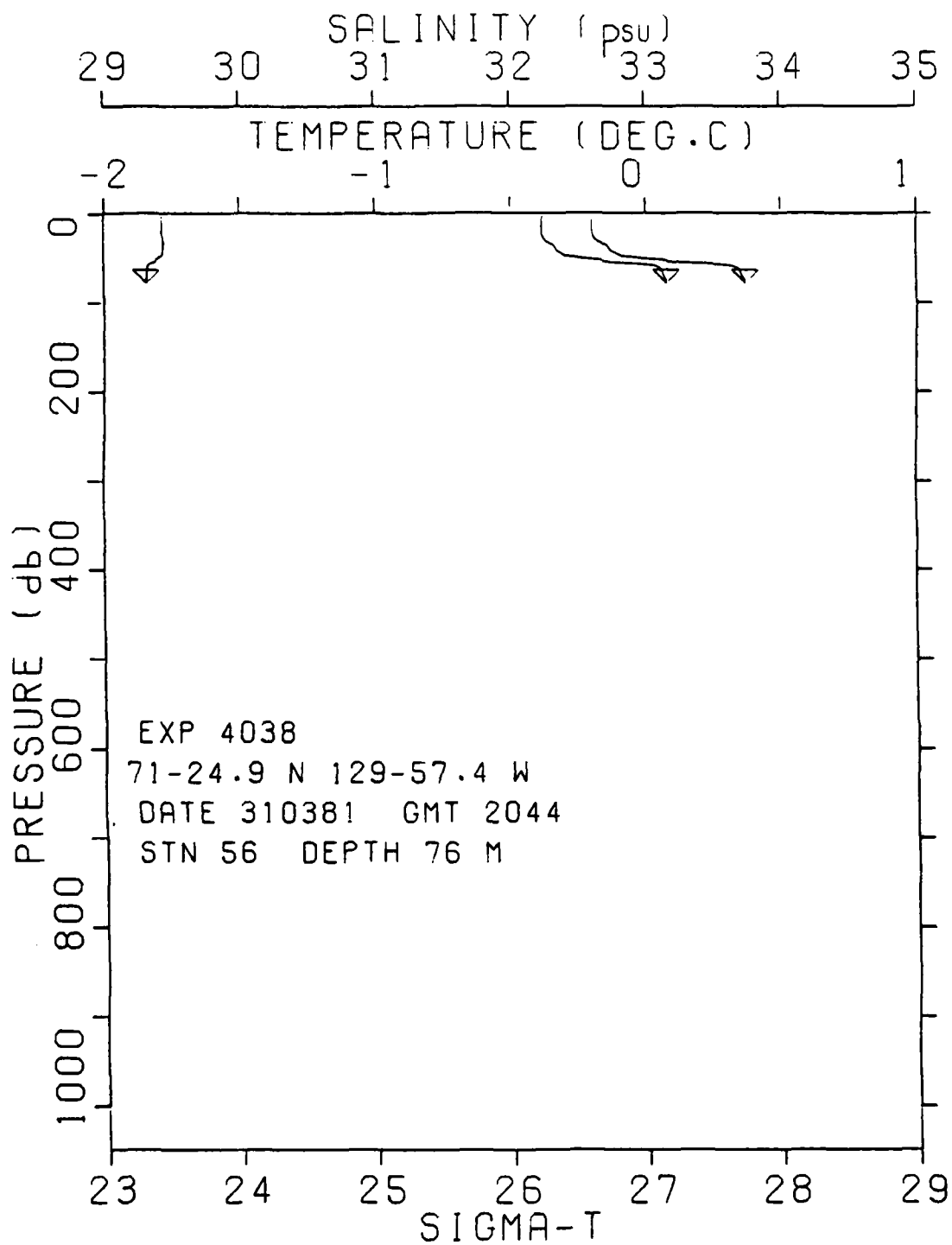


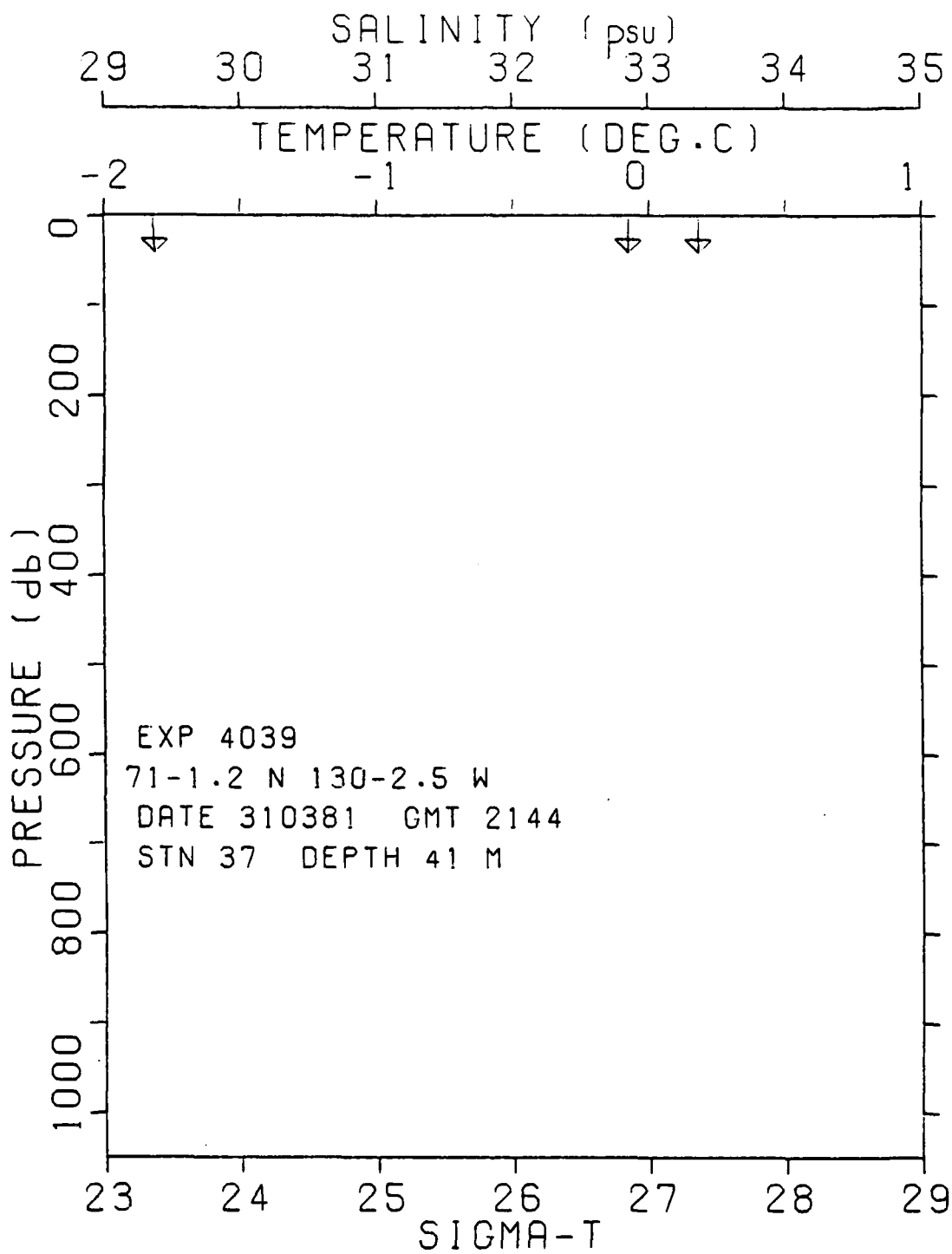


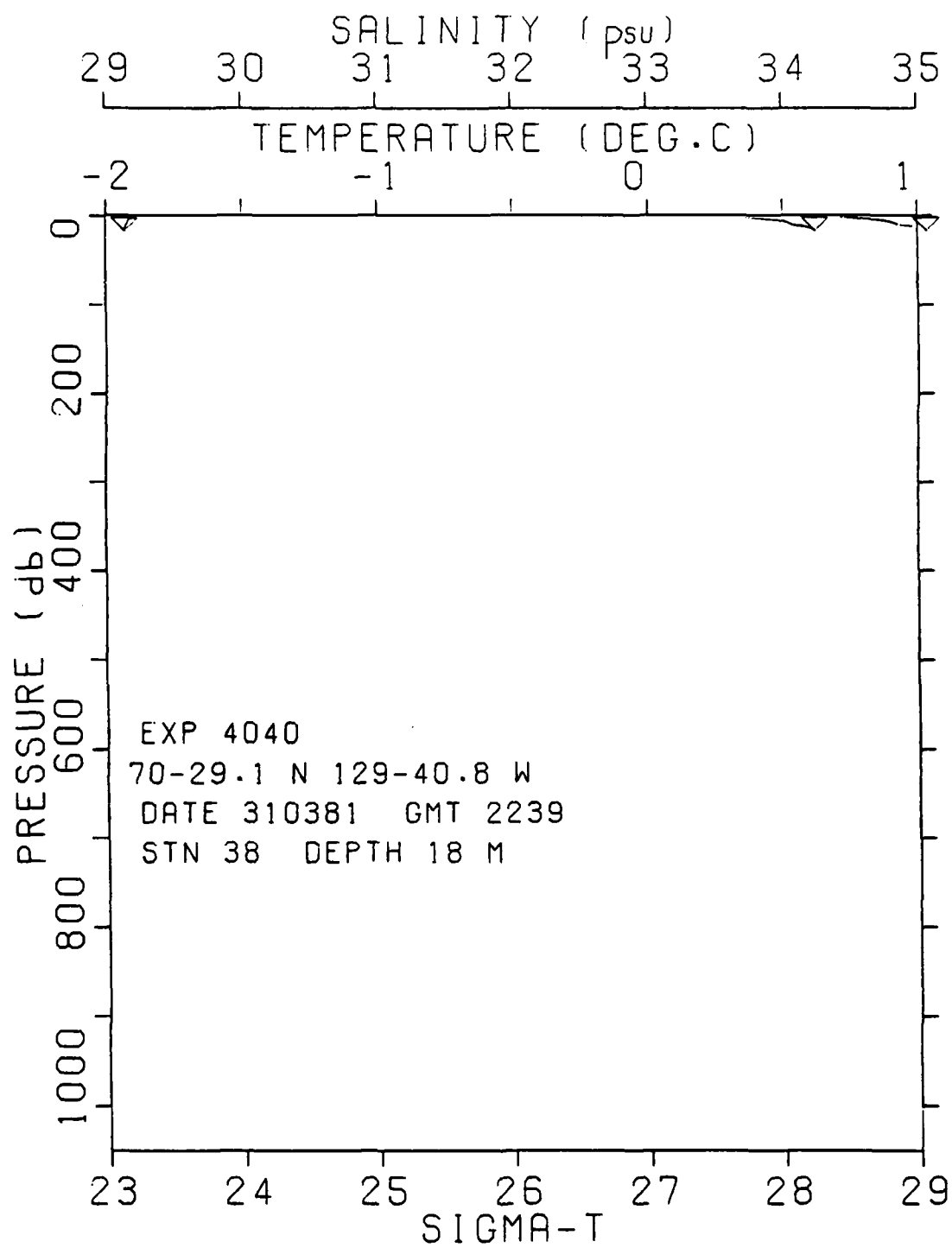


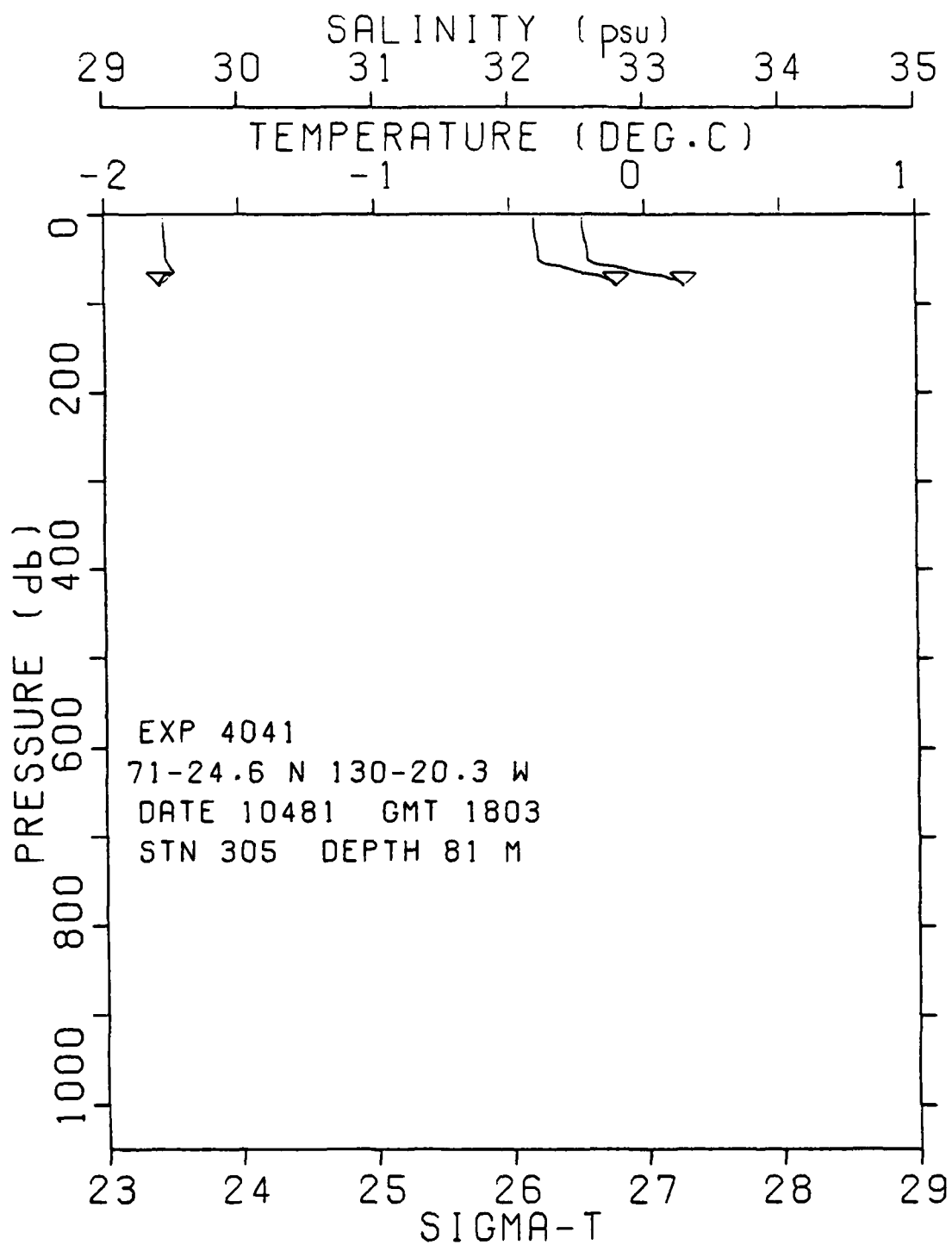


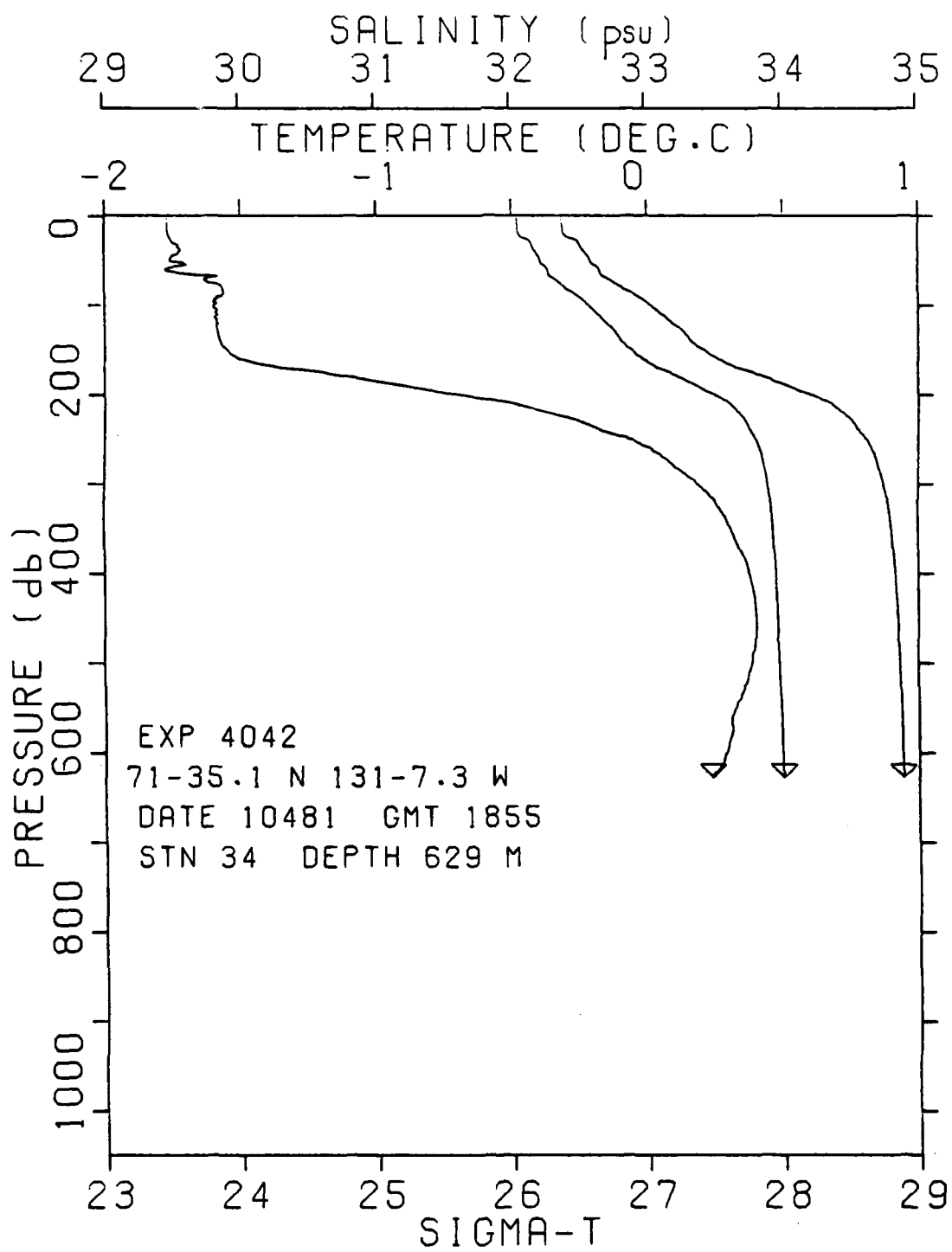


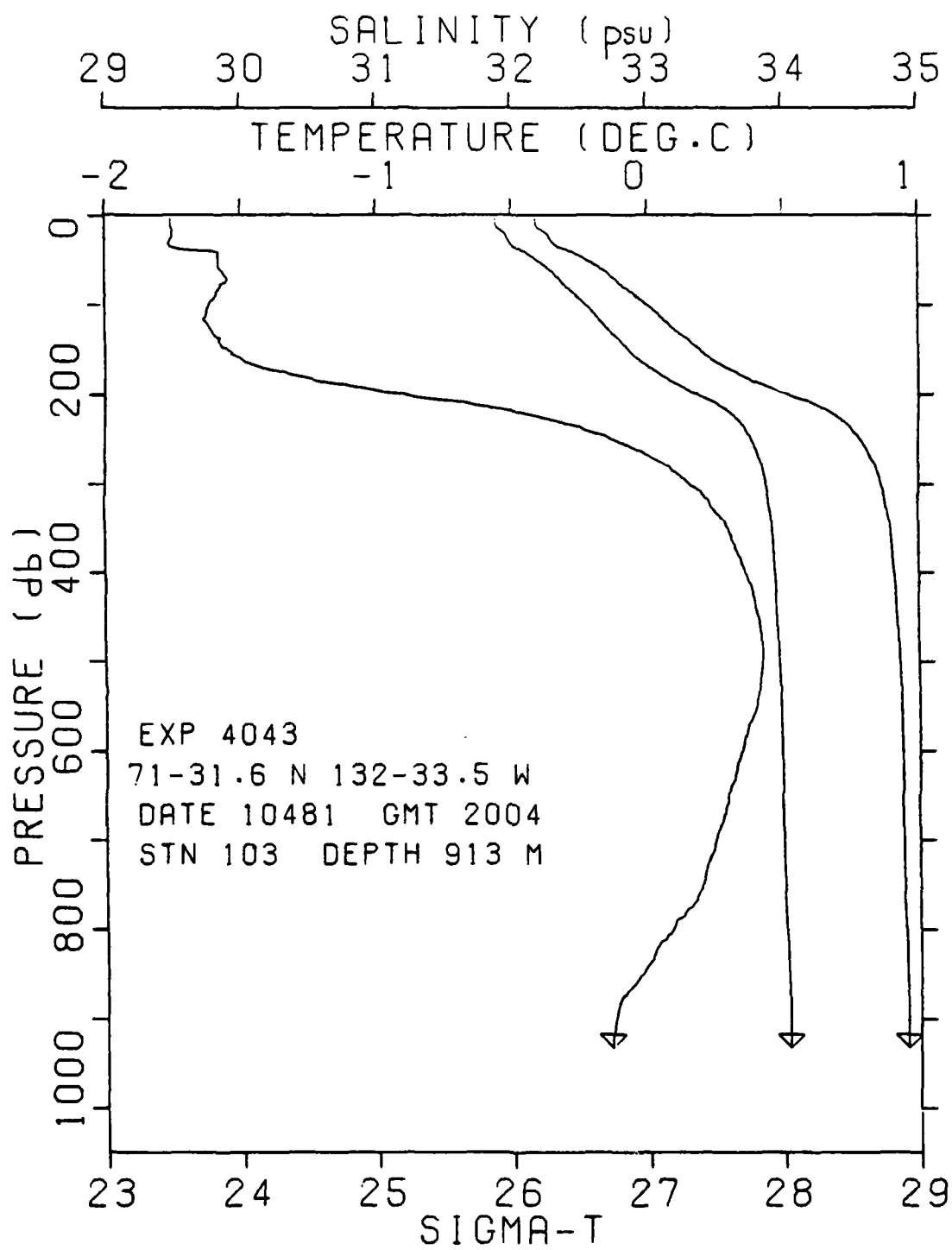


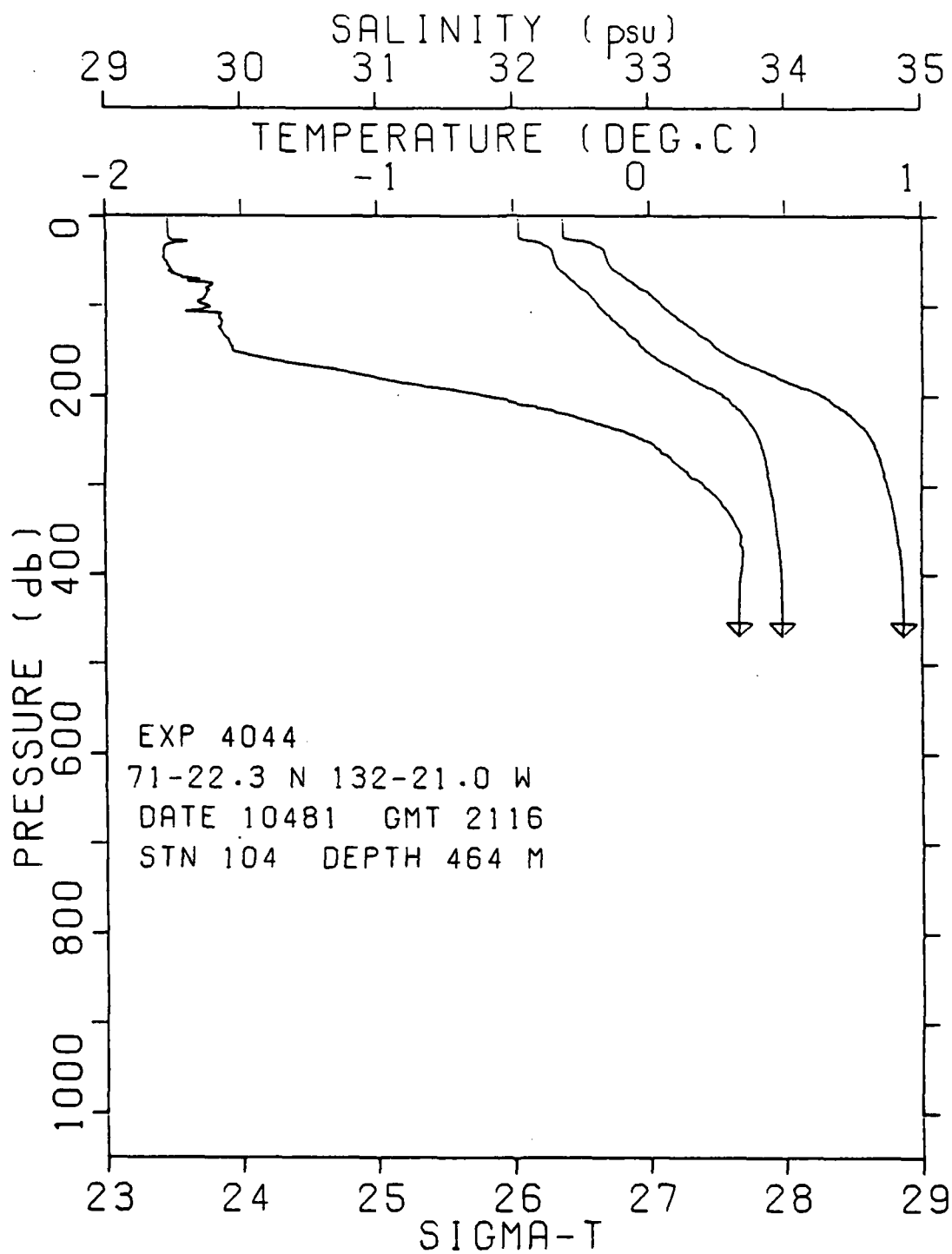


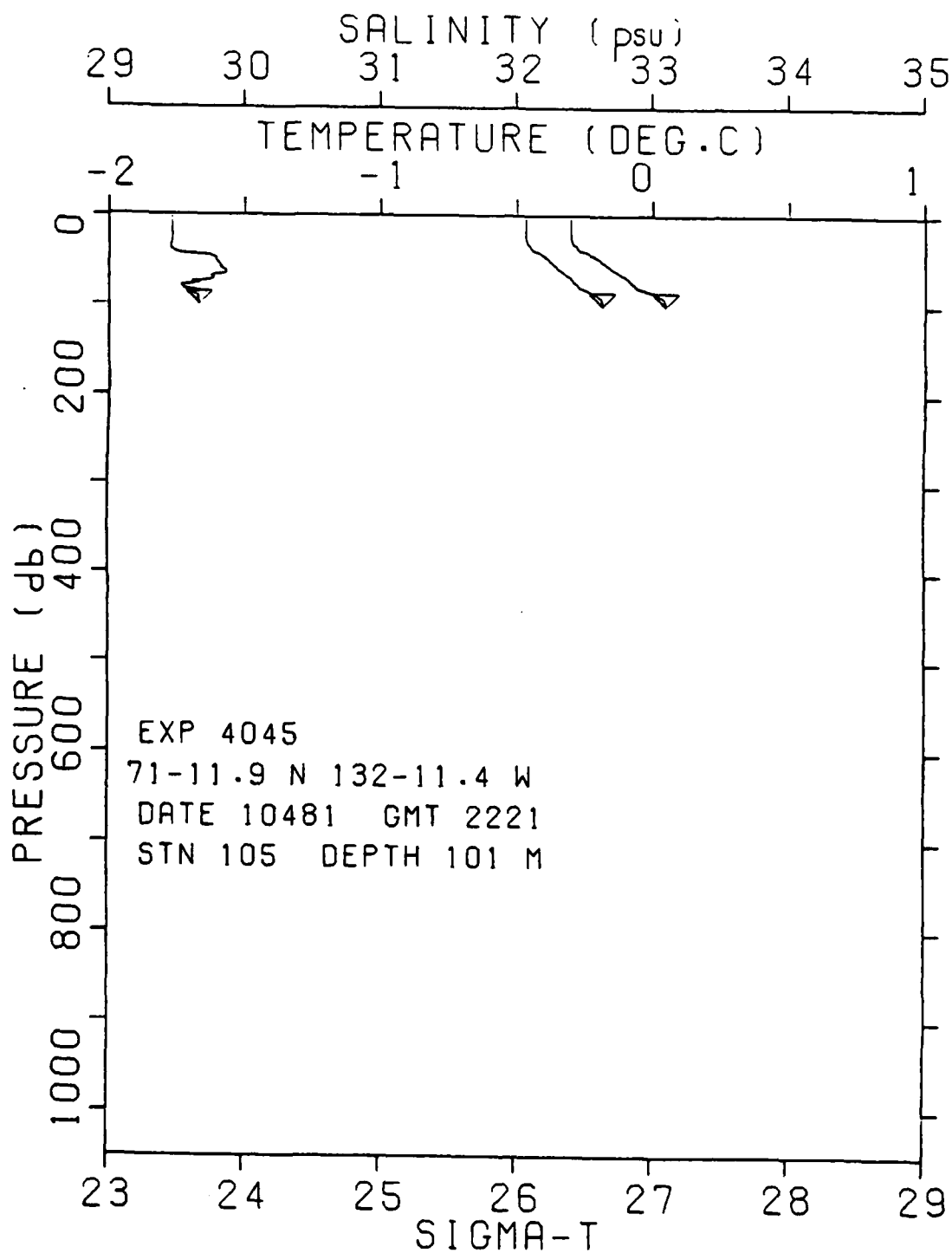


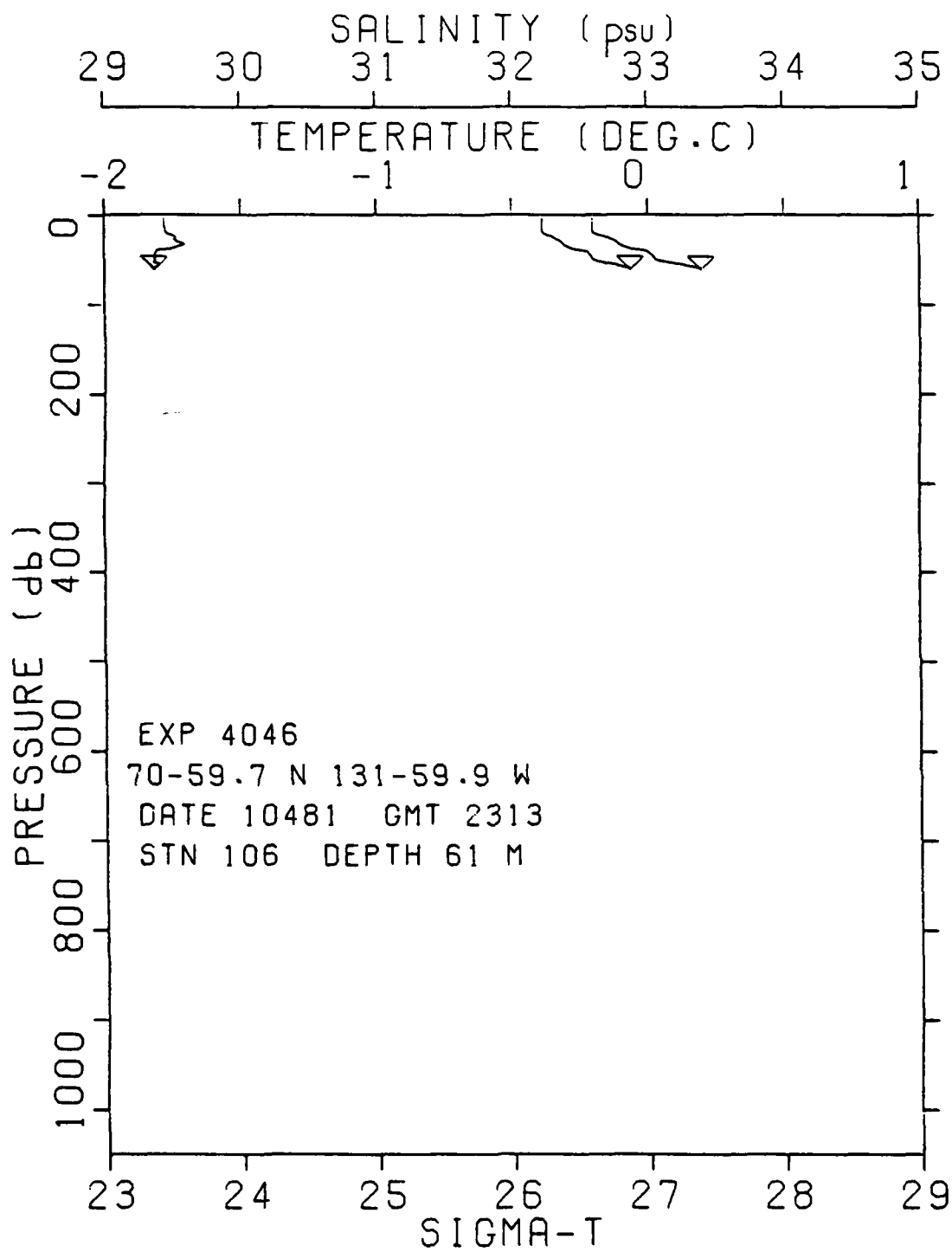


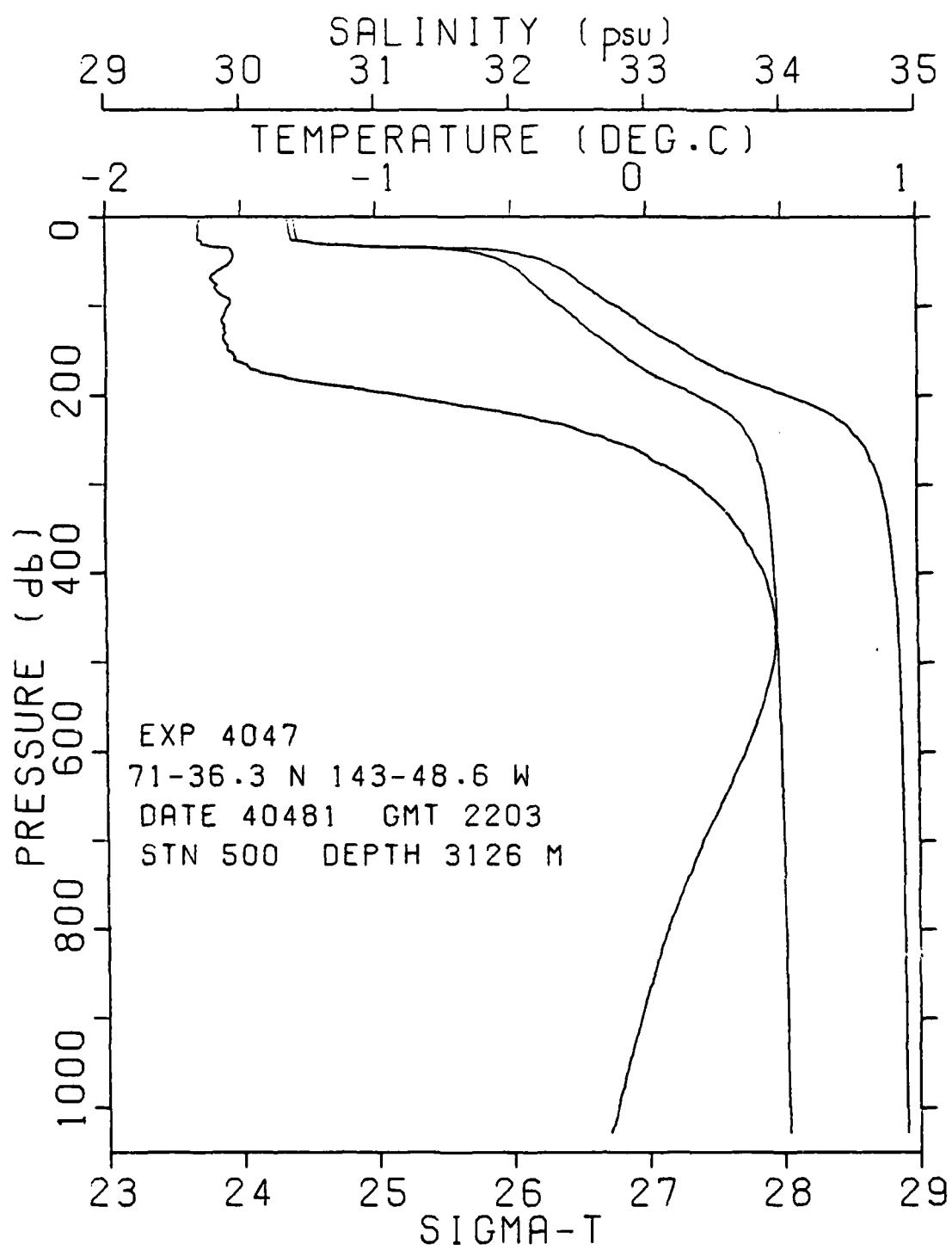


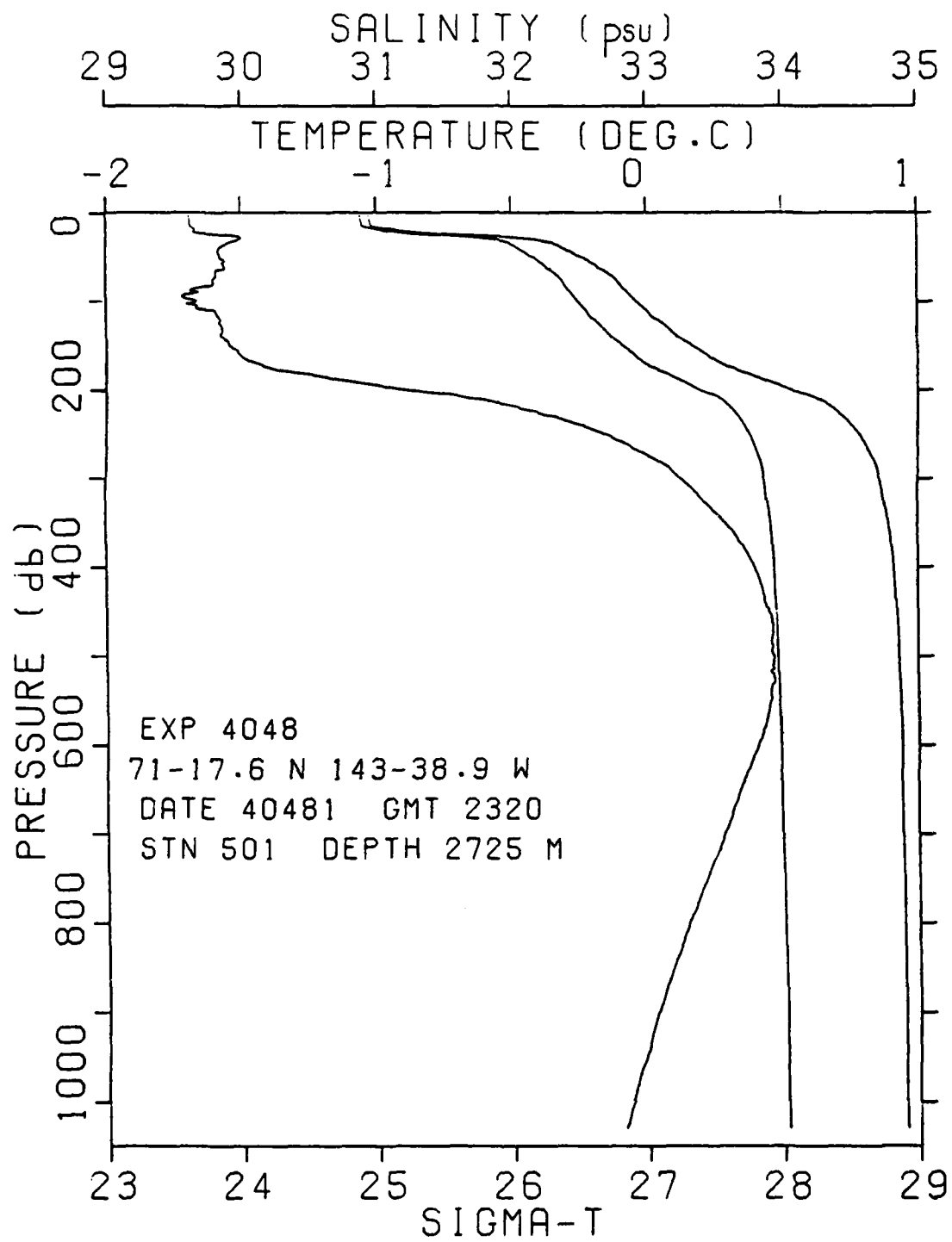


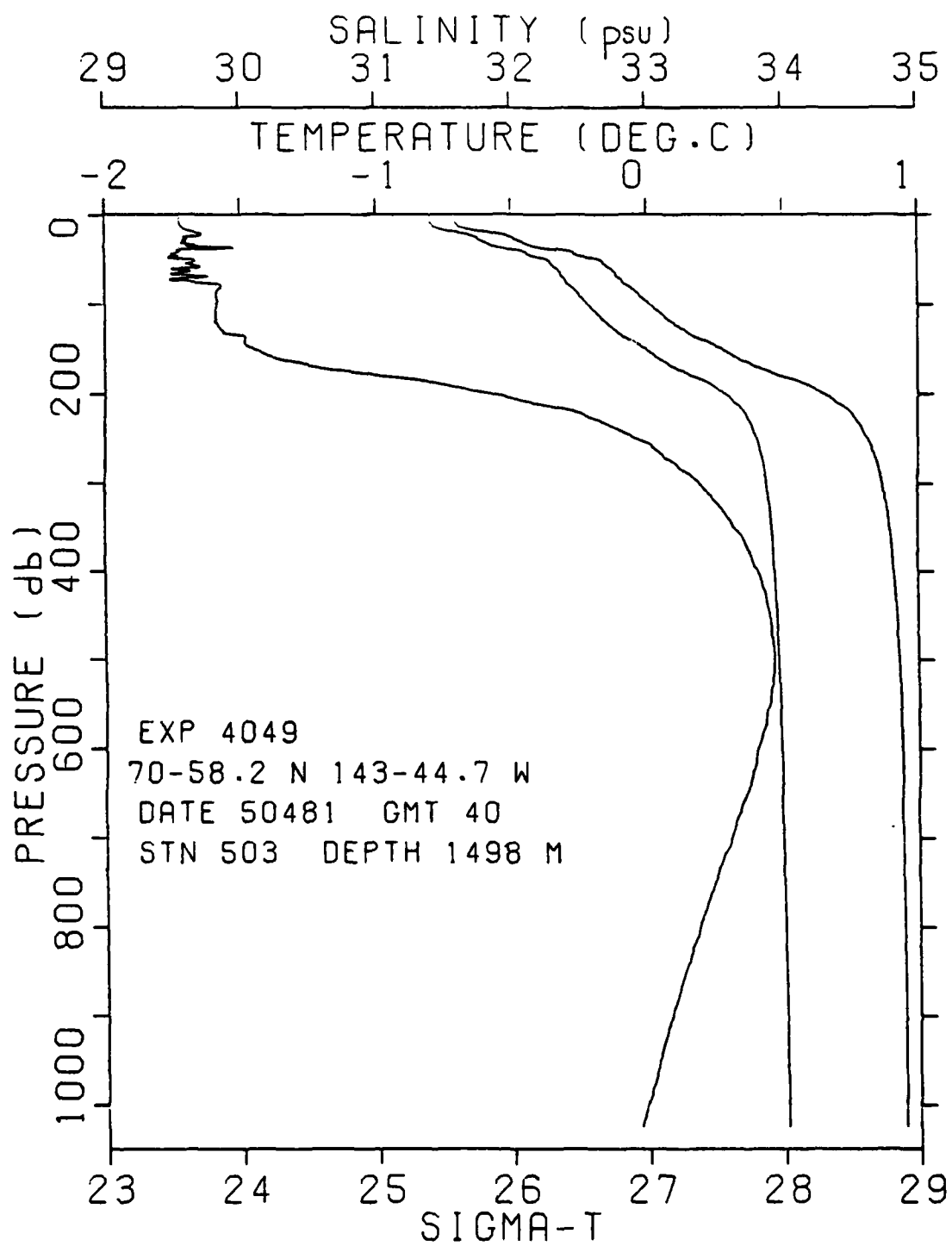


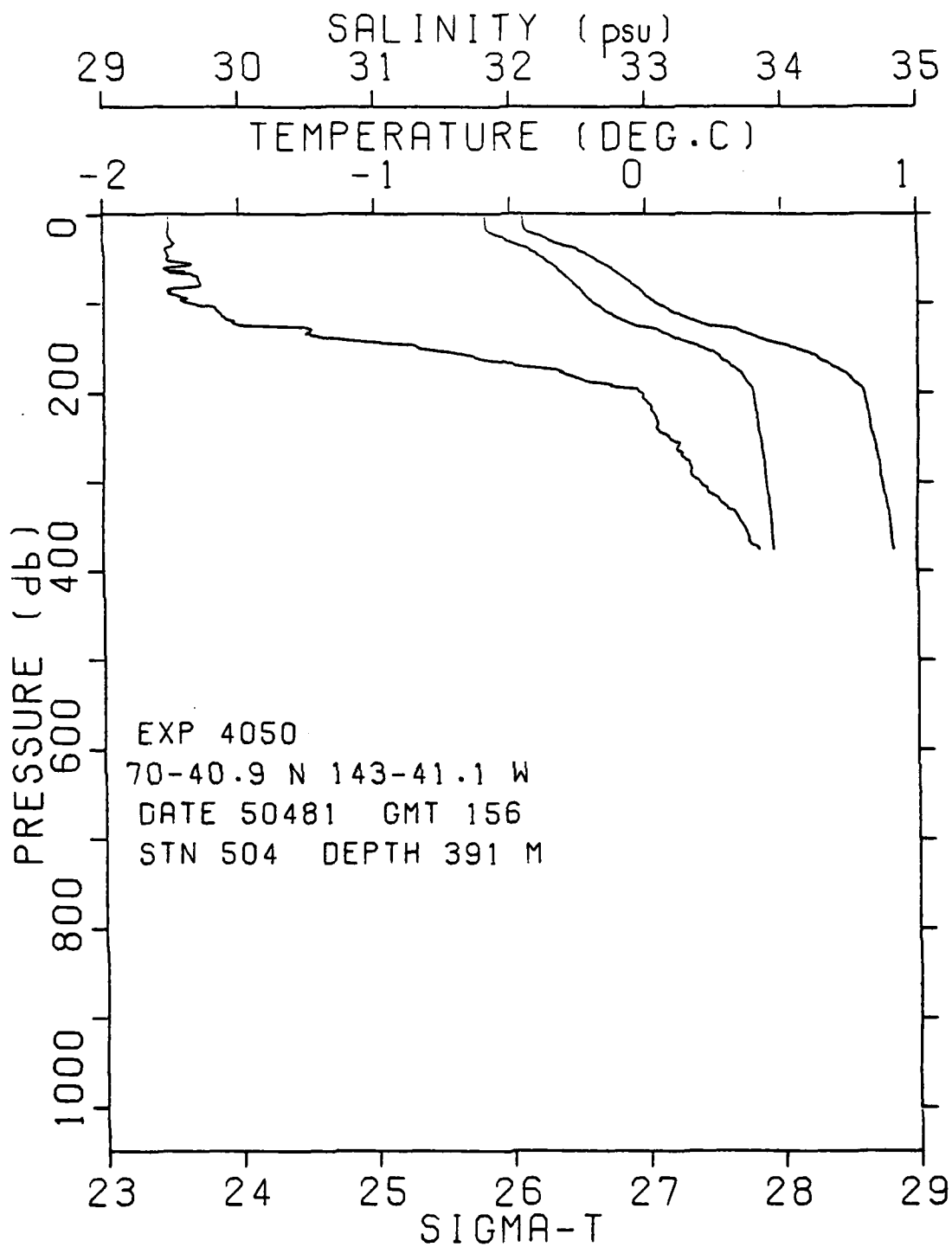


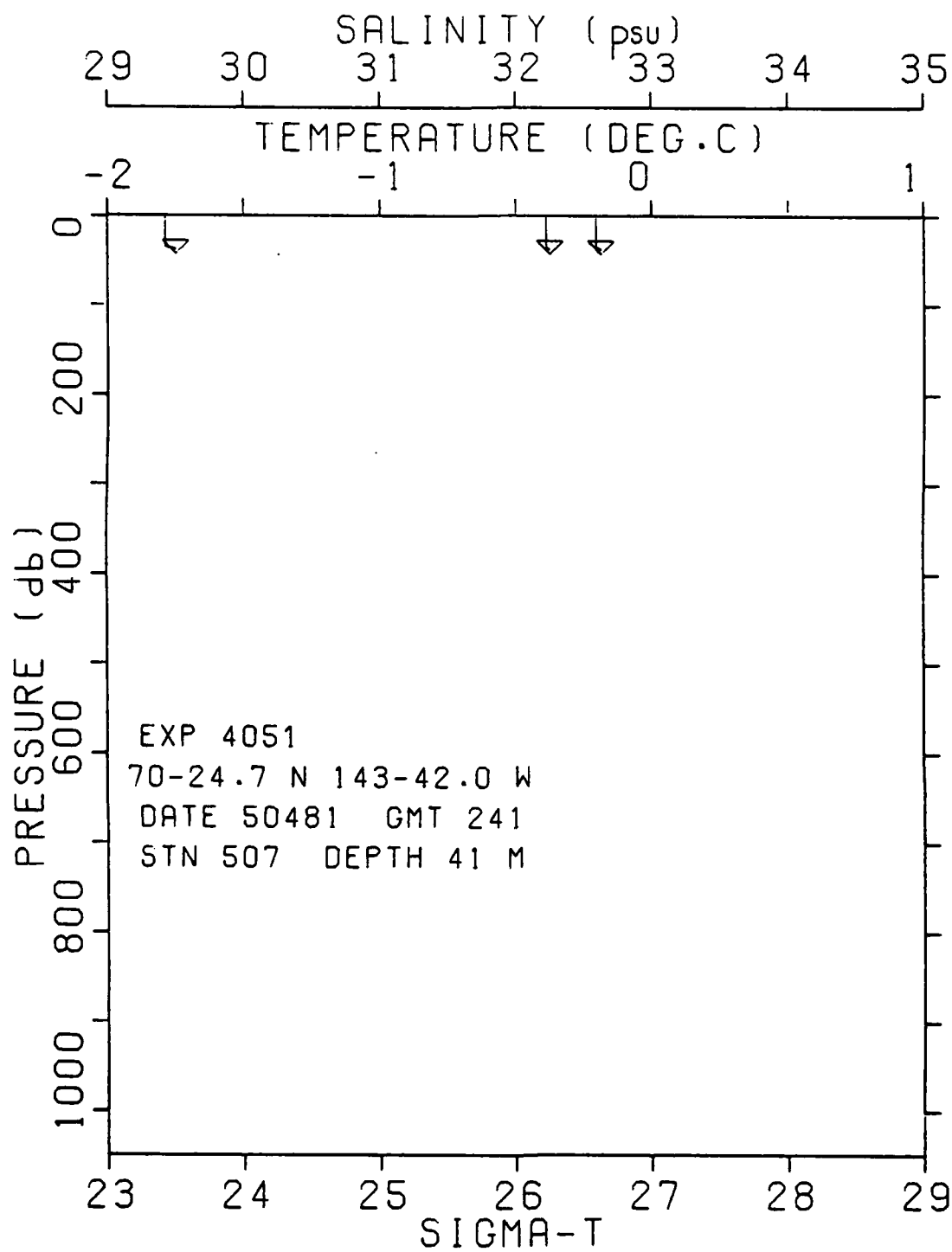


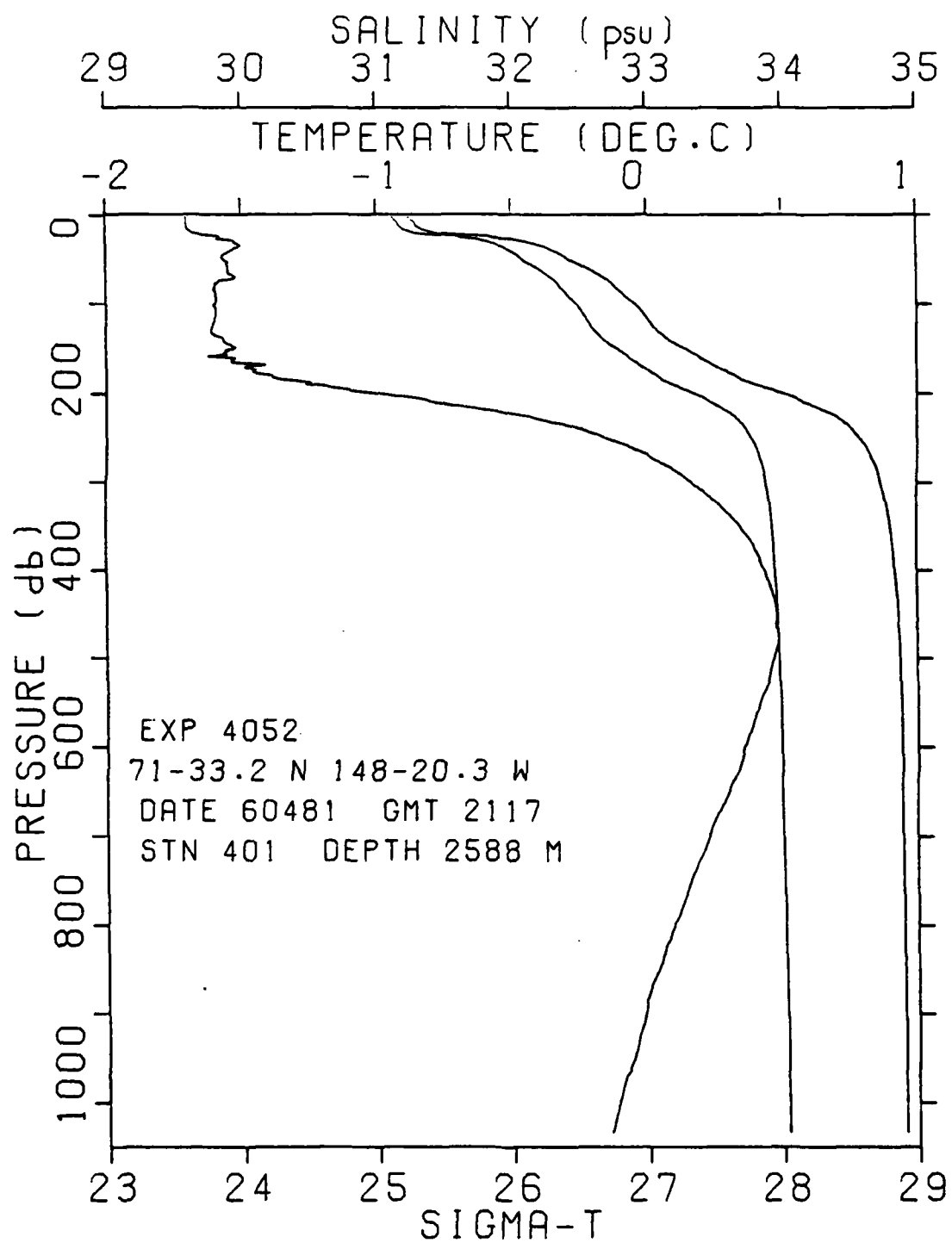


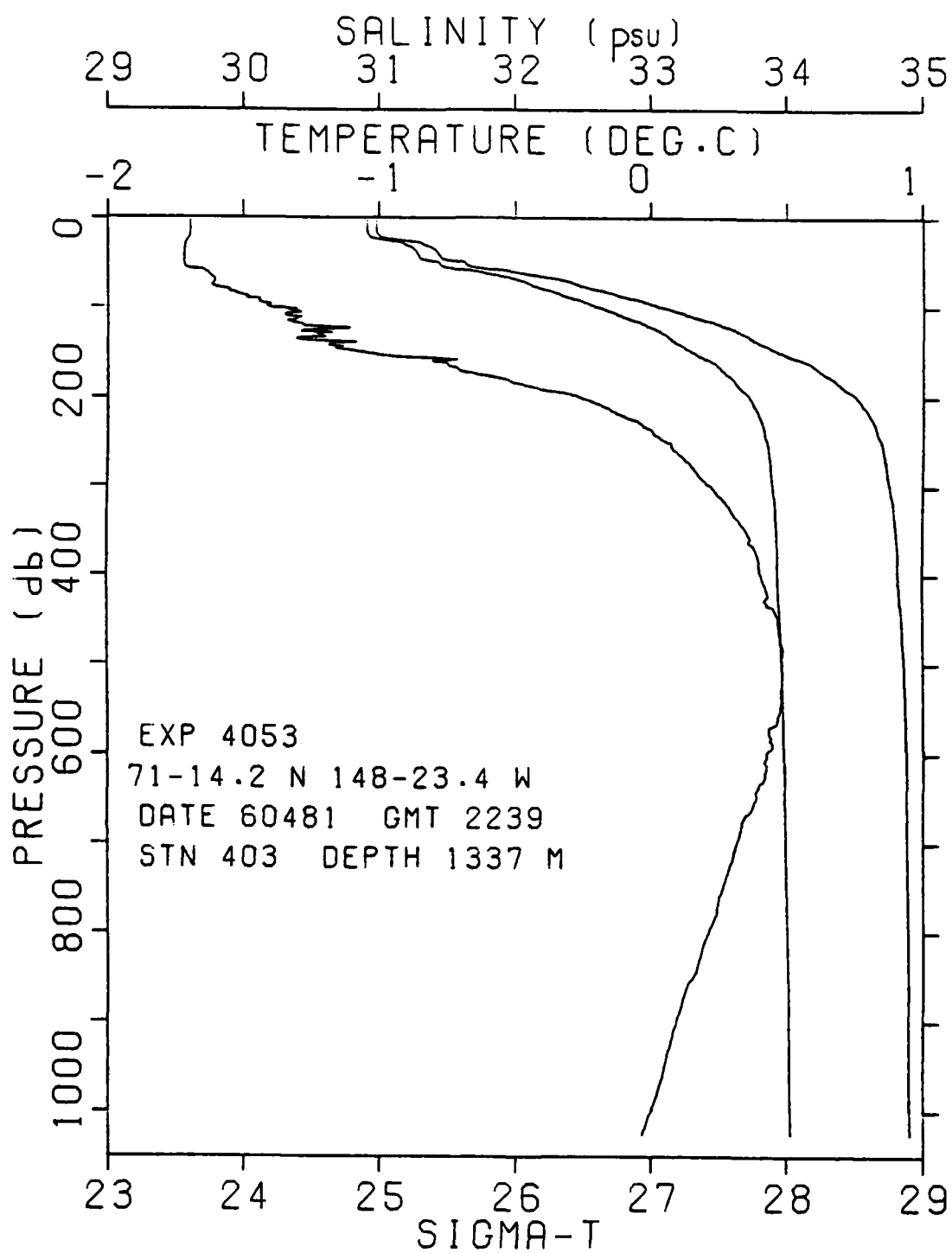


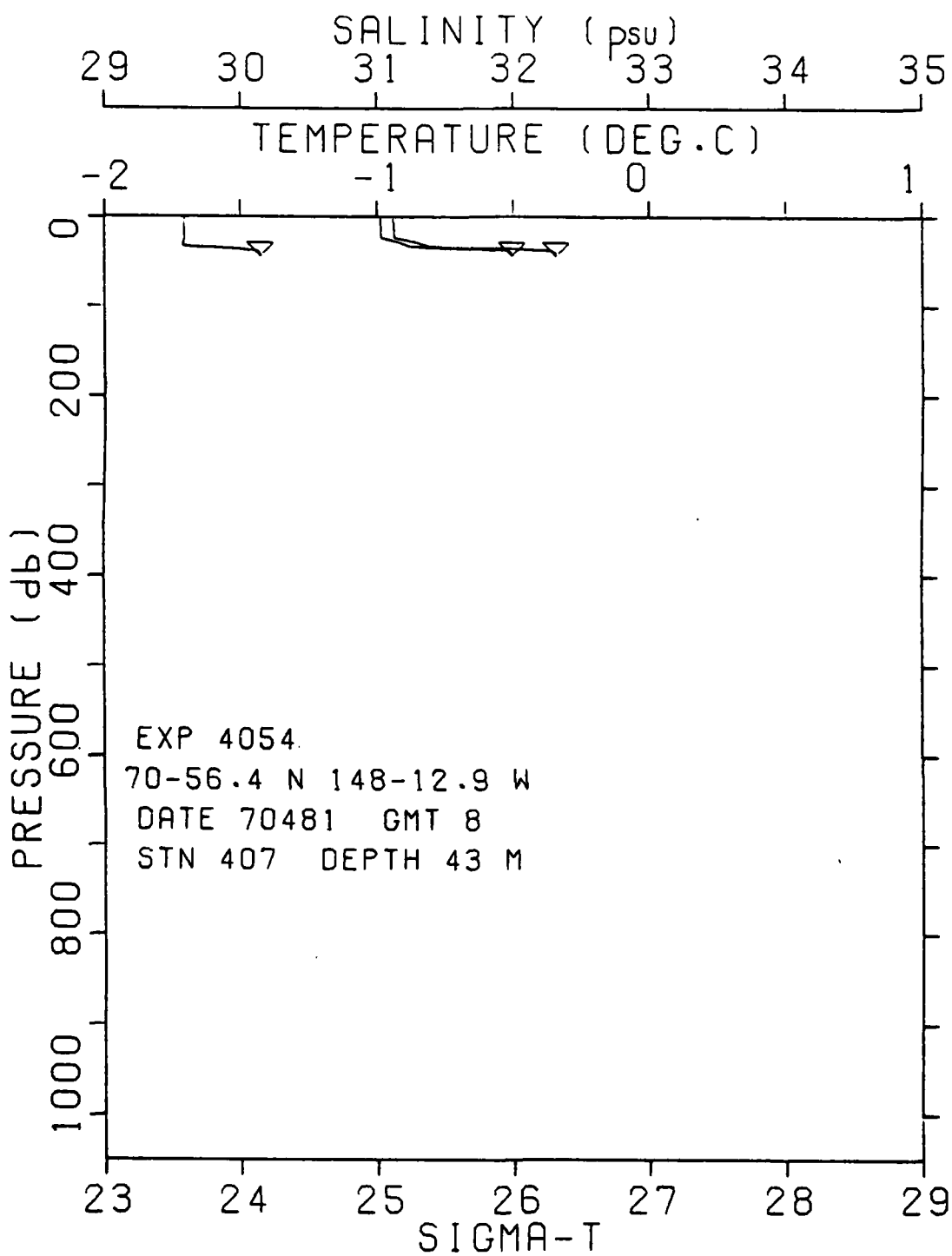


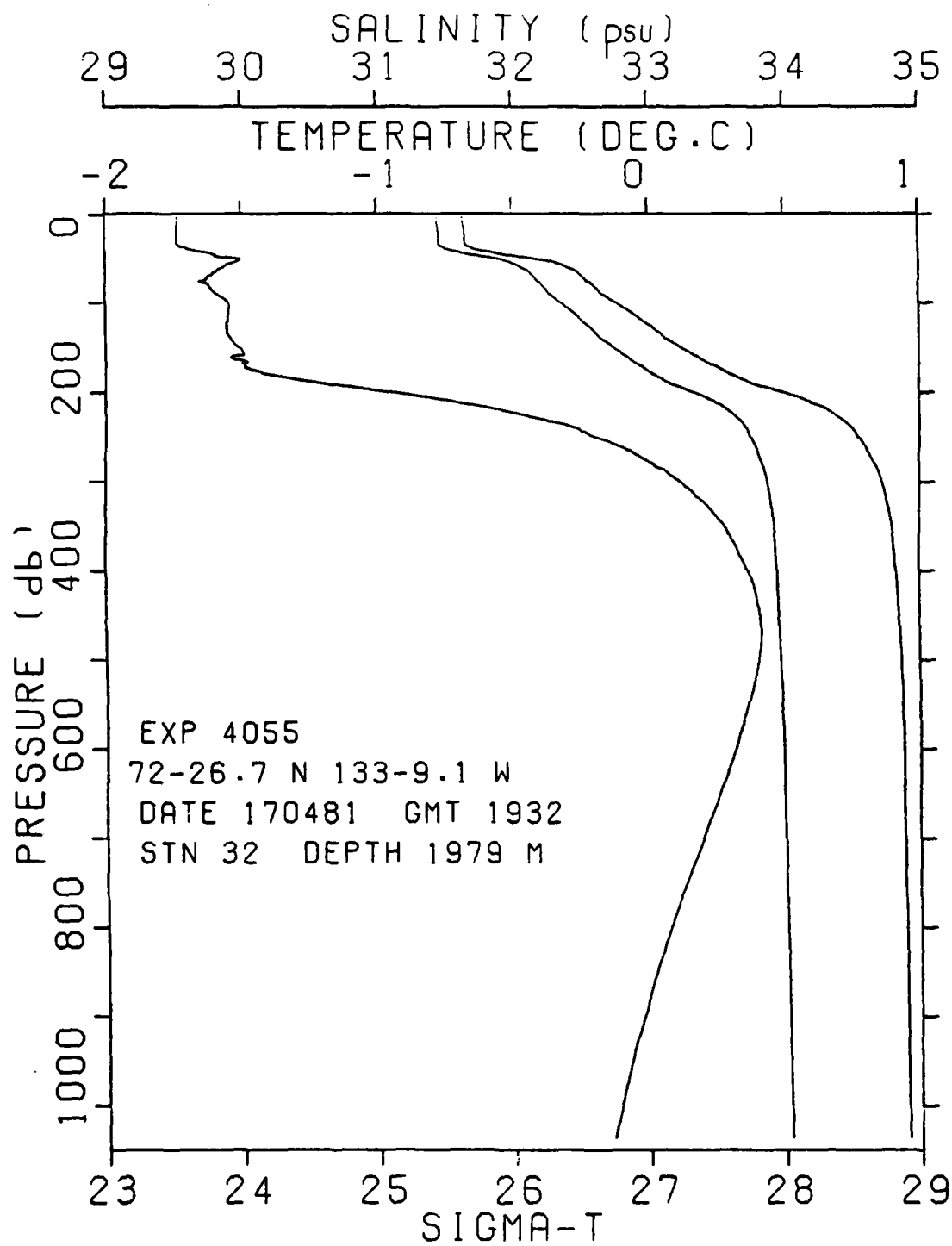


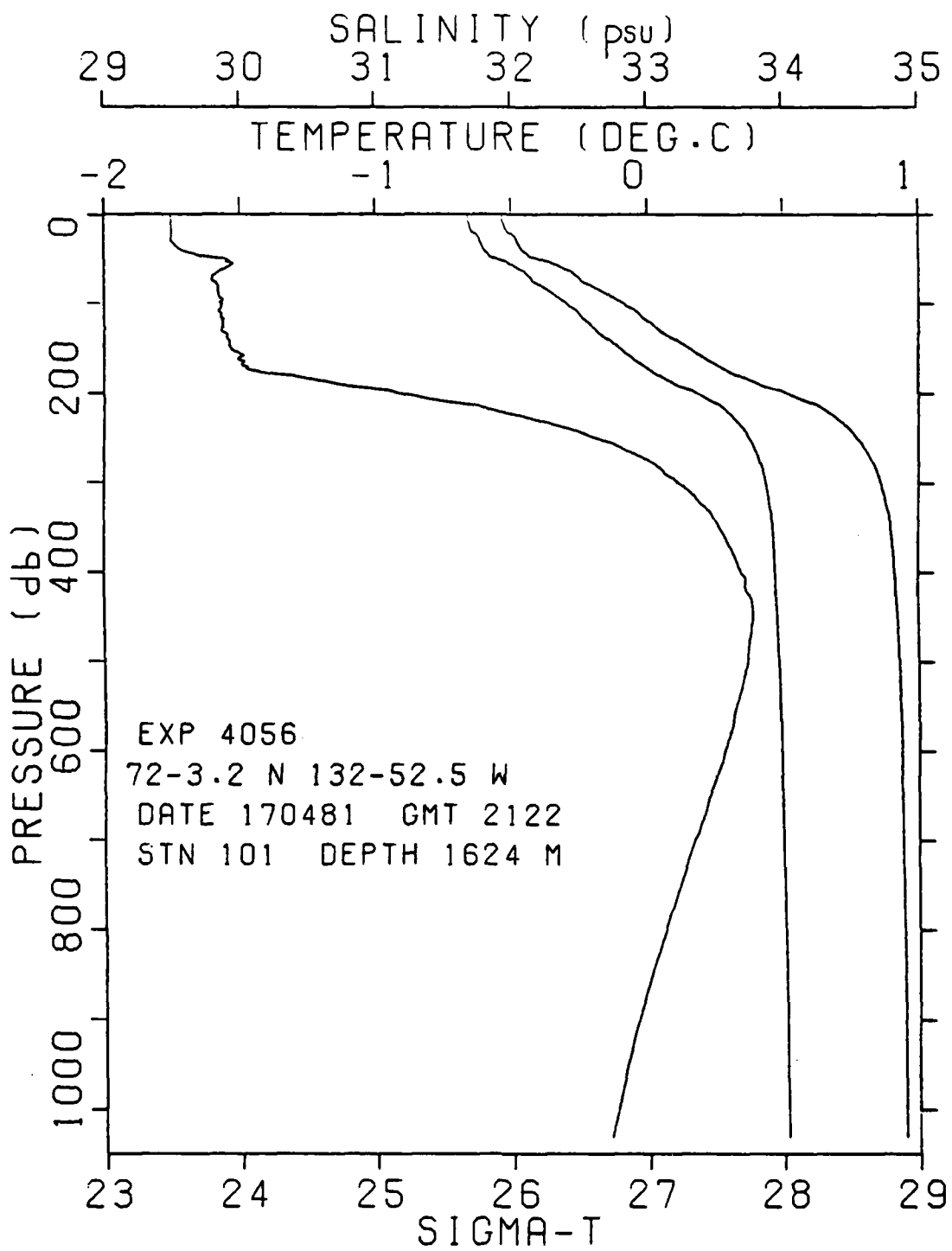


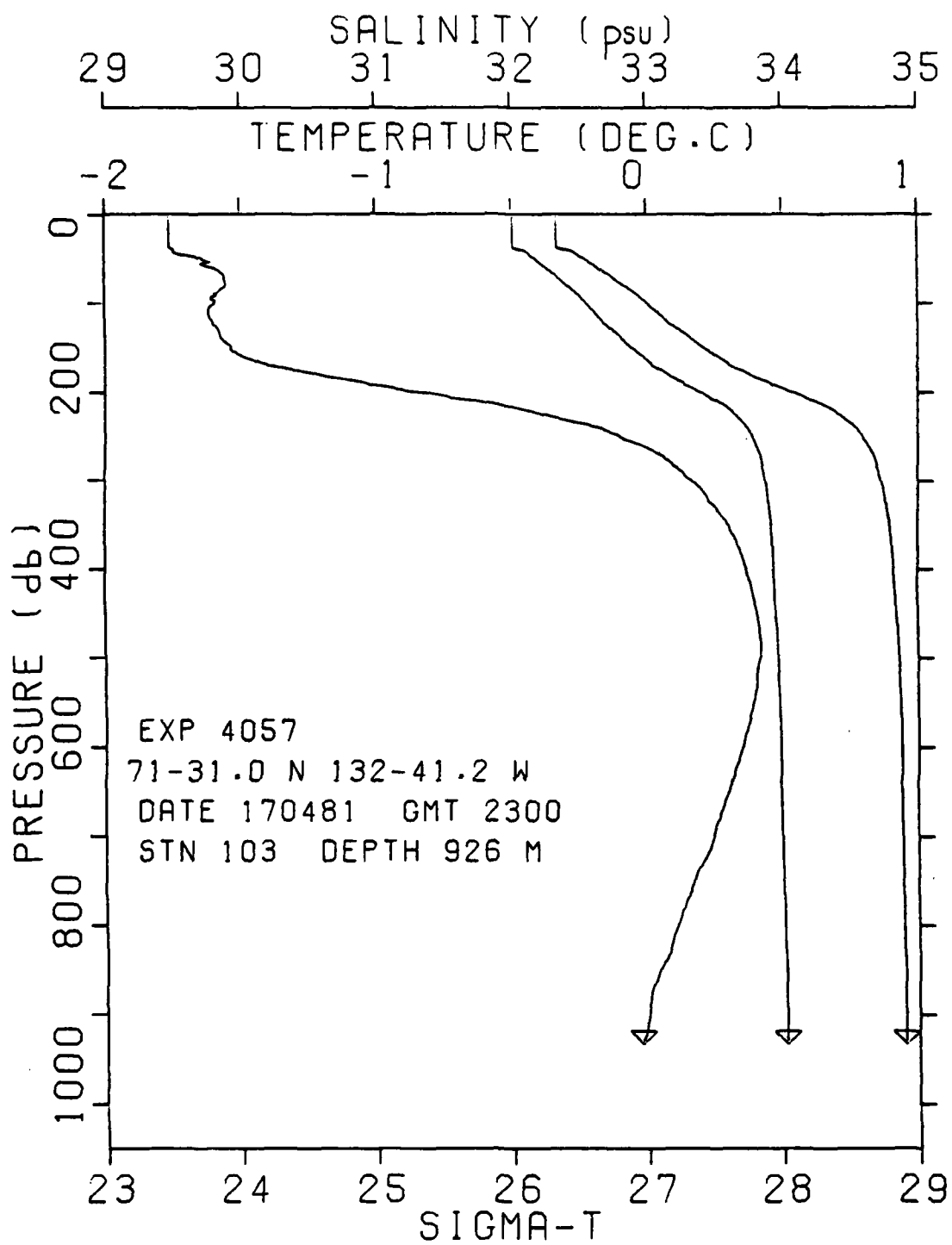


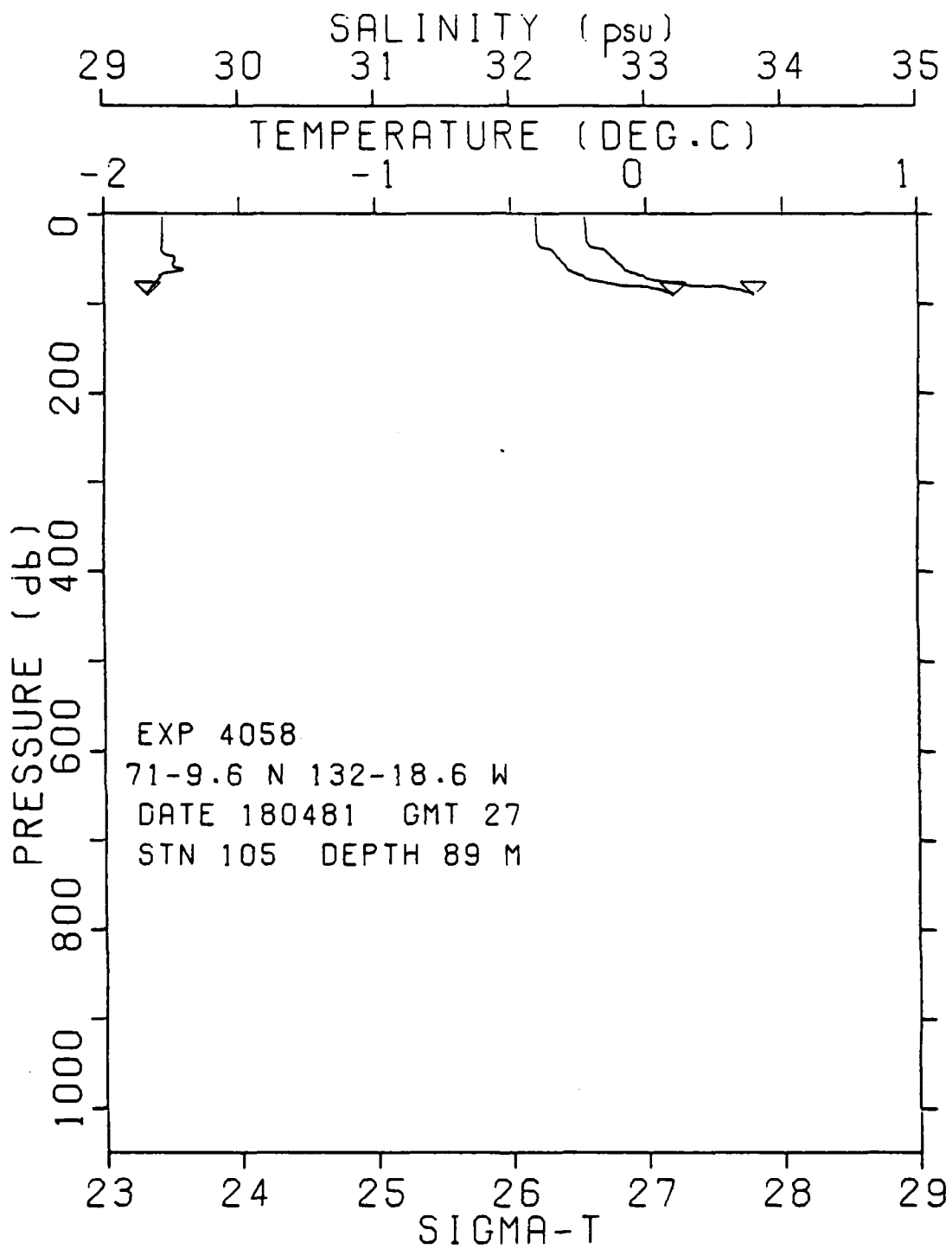


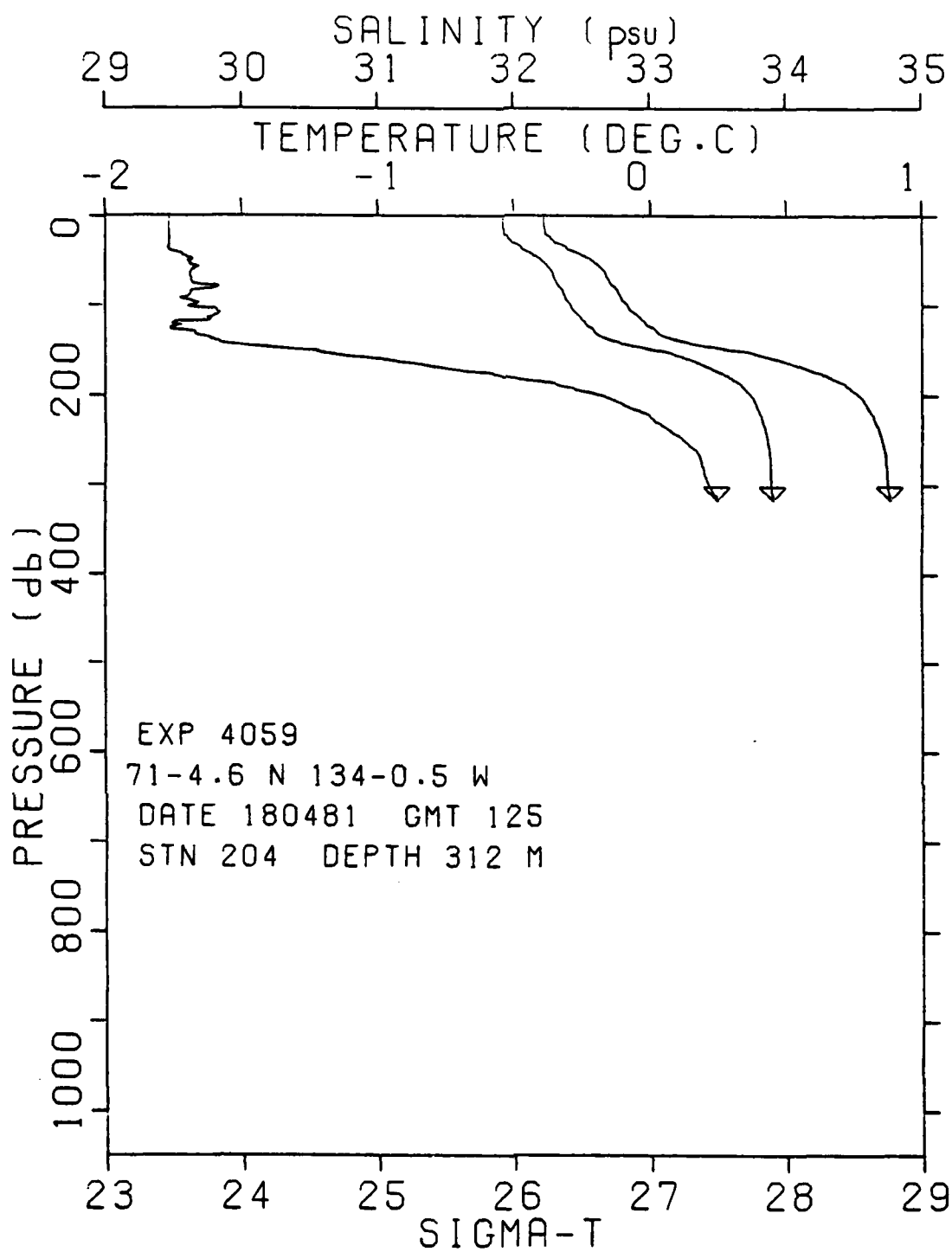


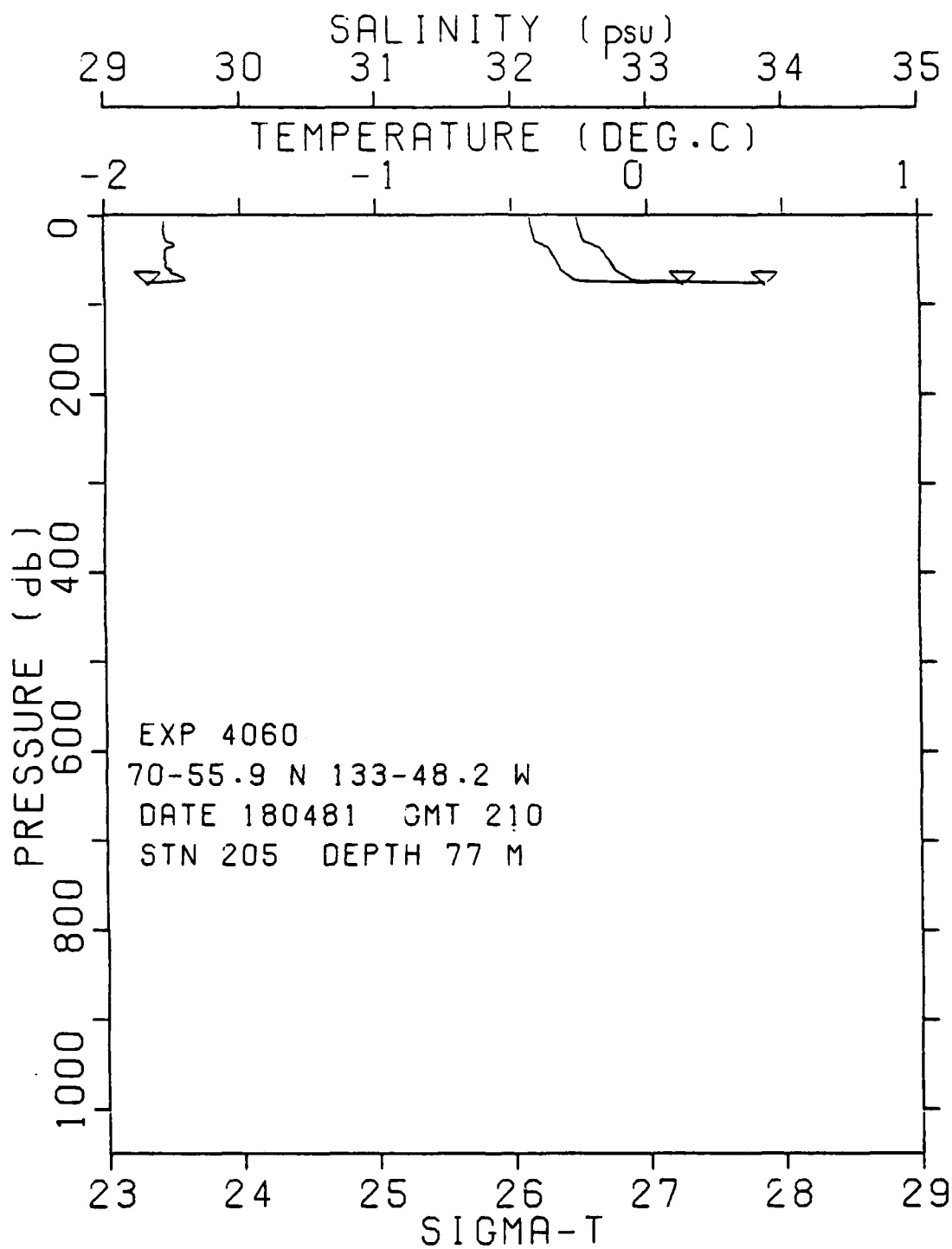












AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

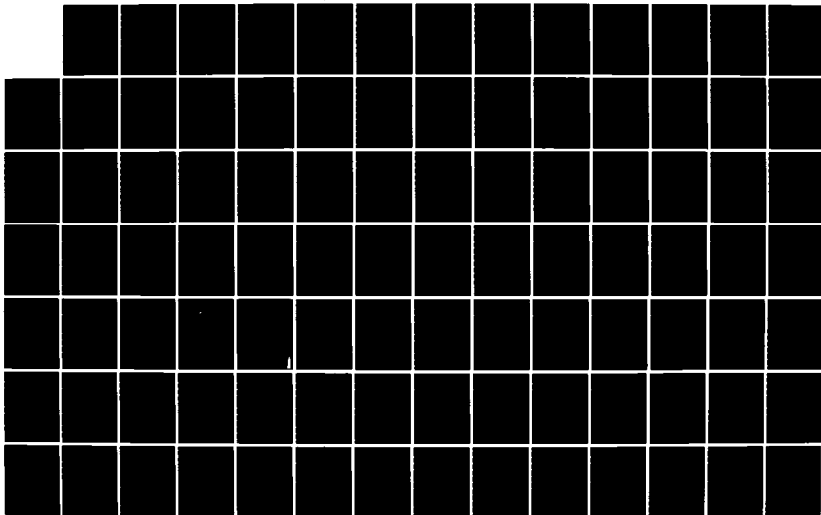
2/6

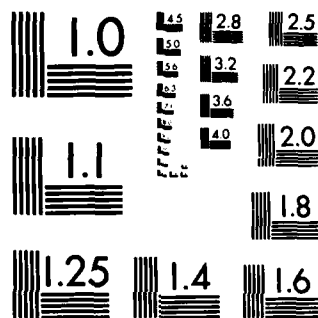
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DATA APPENDIX 2

Time Series and Filtered Time Series Plots
of all Current Meter Data

CG11

40 m depth

70° 53.0' N 145° 55.3' W

9 April 1981 to 1 August 1981

Longshore direction is 118° T

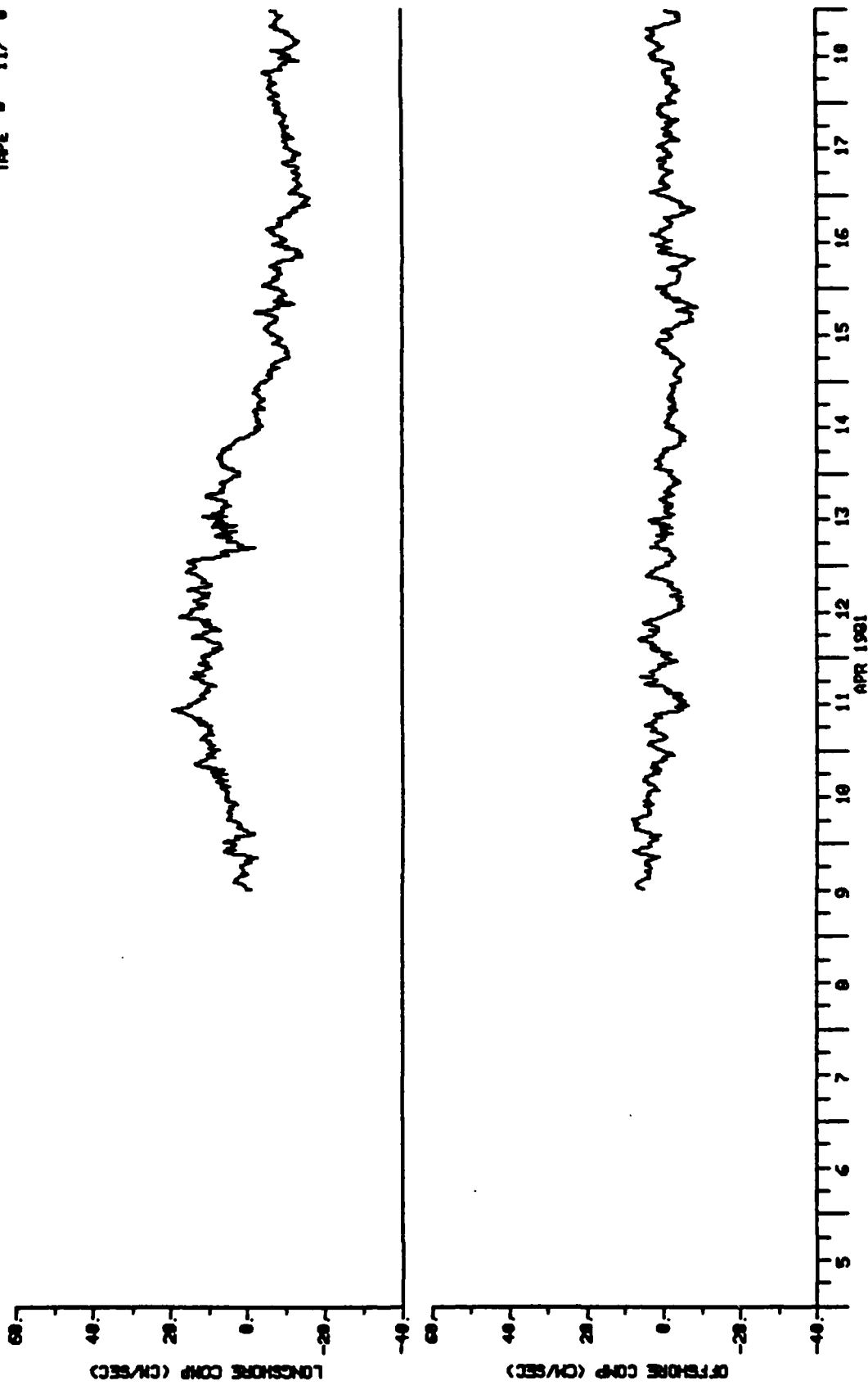
Offshore direction is 028° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

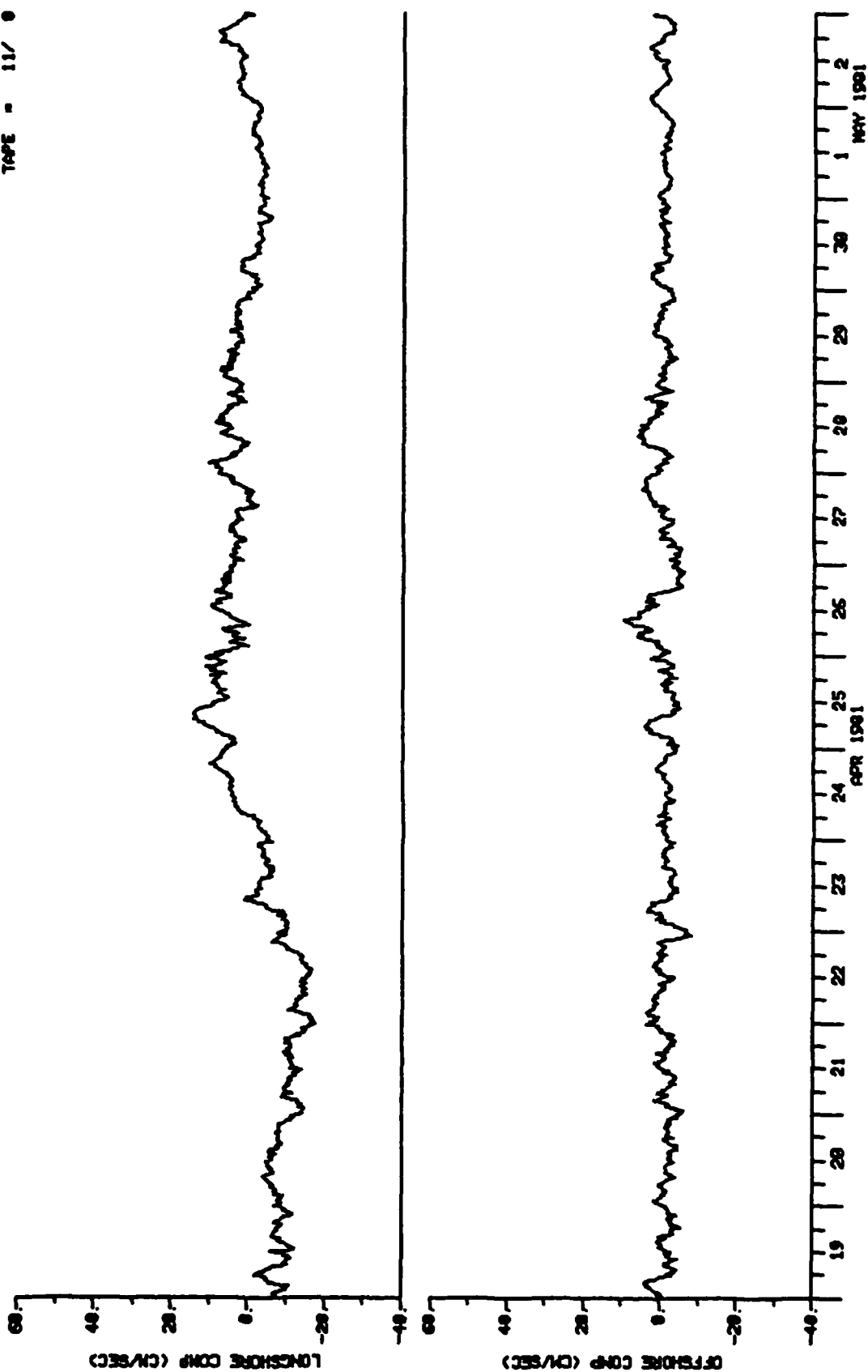
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - 00-1
 DEPTH - 40
 TAPE - 11/ 0



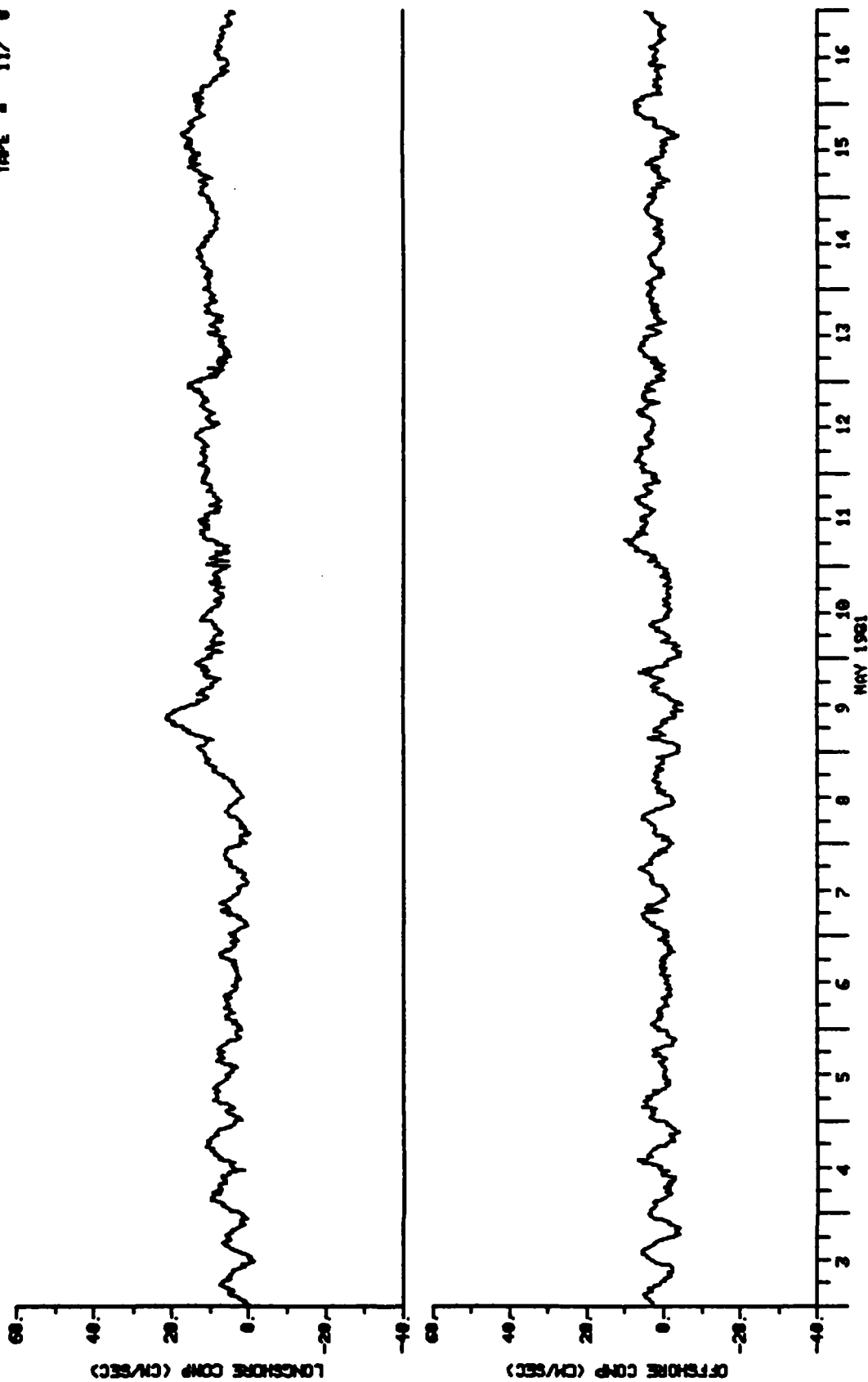
USCG BEAUFORT SEA STUDY

PAGE = 2
 STATION = CO-1
 DEPTH = 48
 TAPE = 11/ 0



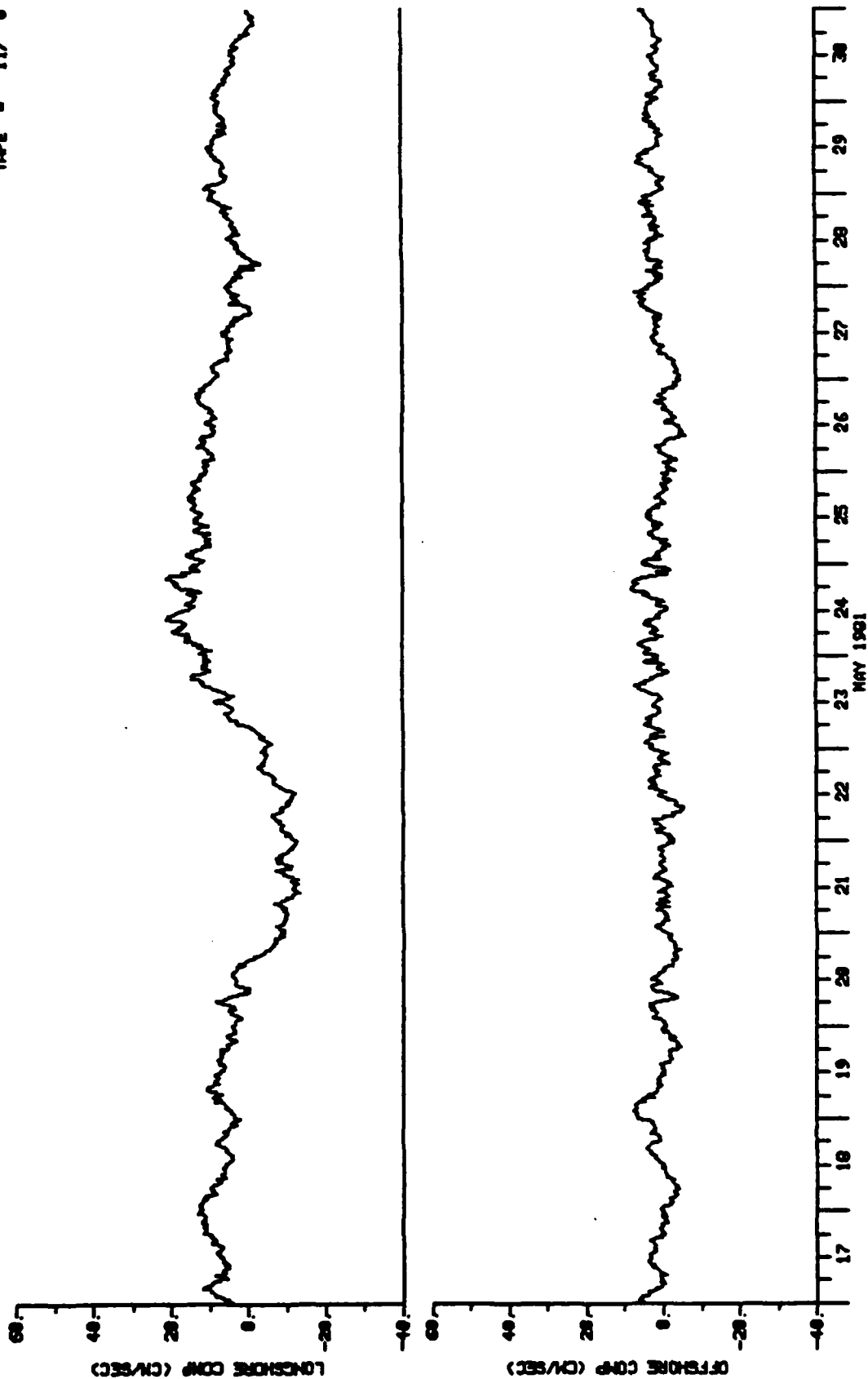
USCG BEAUFORT SEA STUDY

PAGE - 3
STWID - CO-1
DEPTH - 48
TAPE - 11/ 8



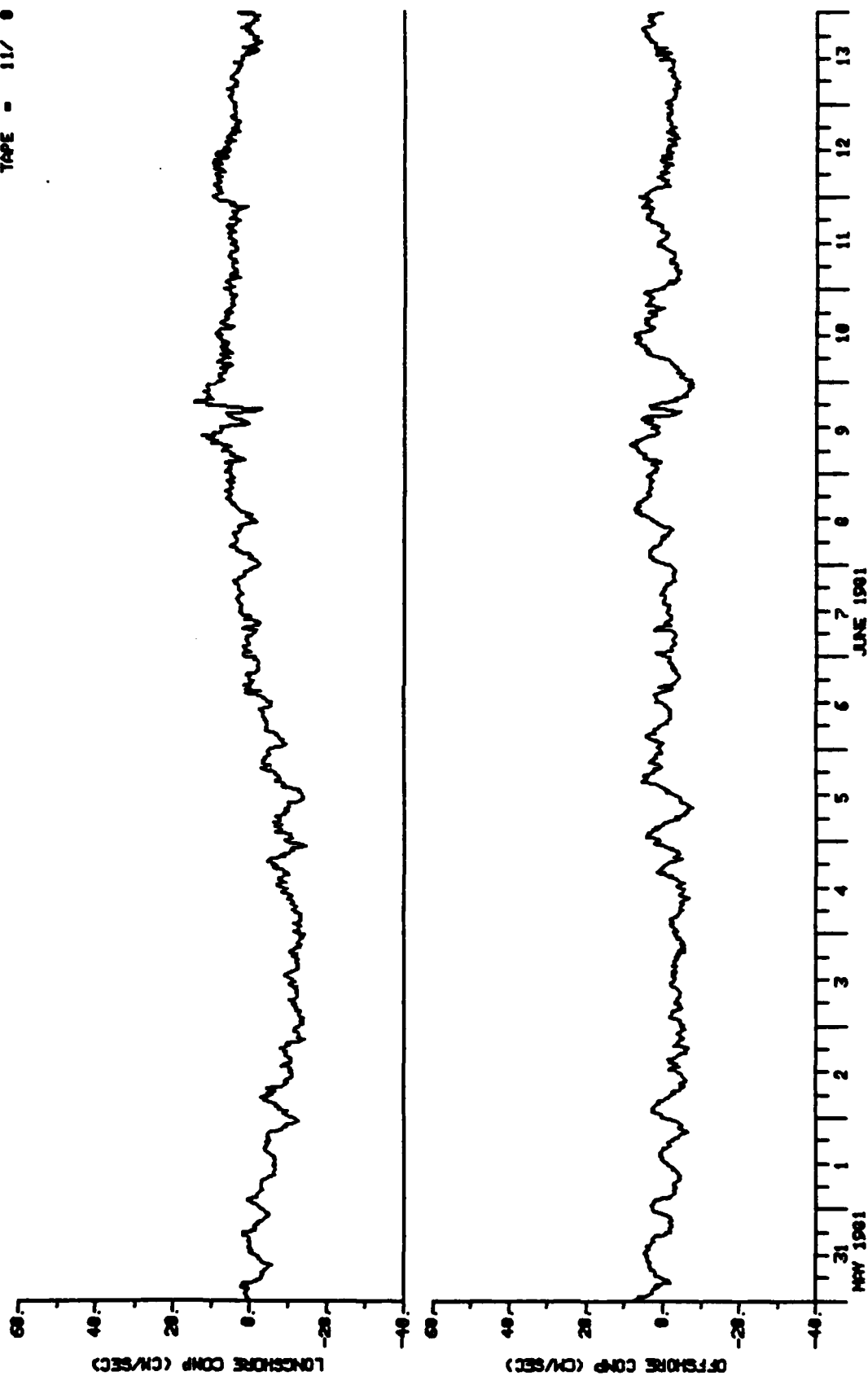
USCG BEAUFORT SEA STUDY

PAGE - 4
STN13 - CO-1
DEPTH - 40
TAPE - 11/ 0



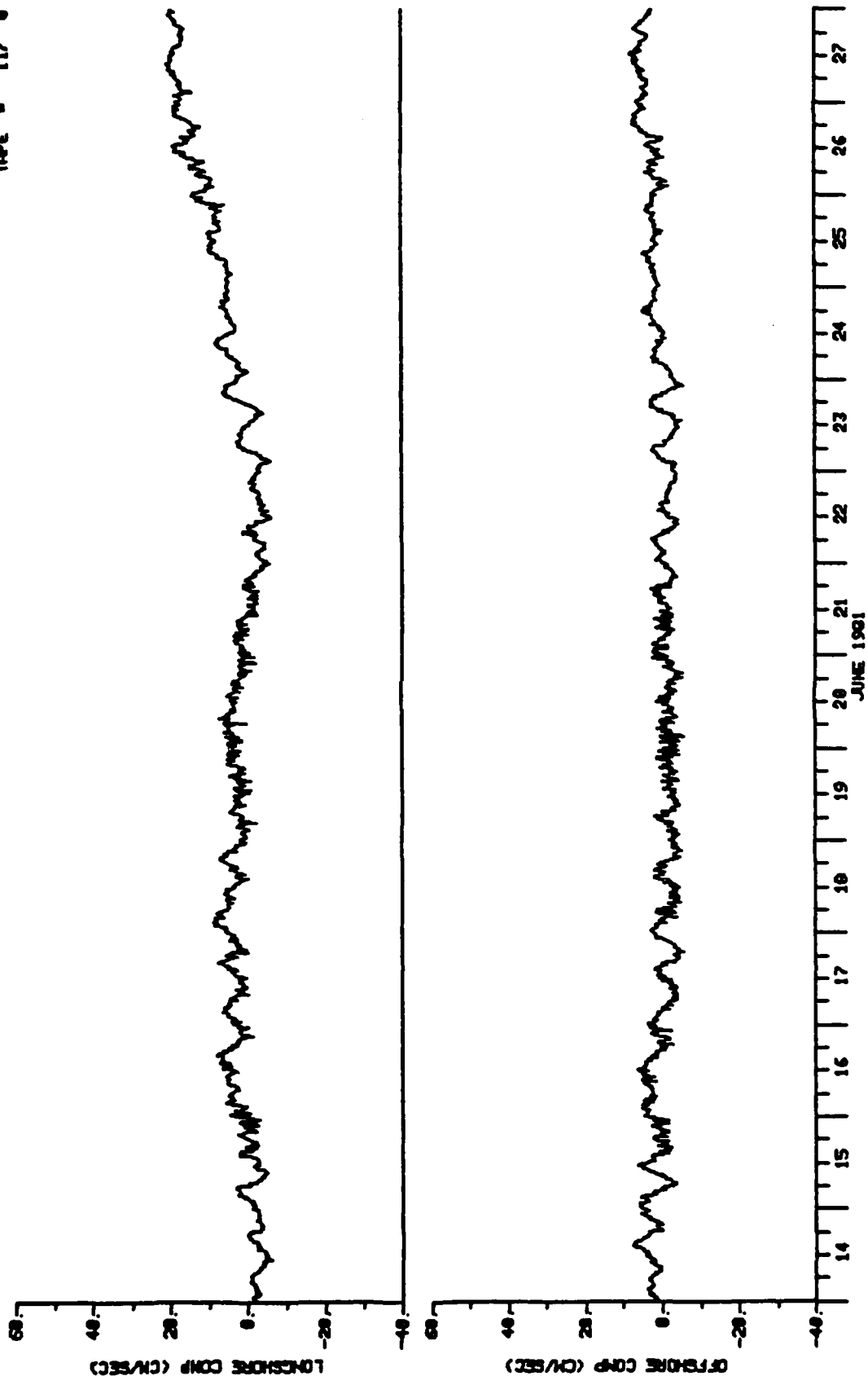
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CO-1
DEPTH - 48
TAPE - 11/ 8



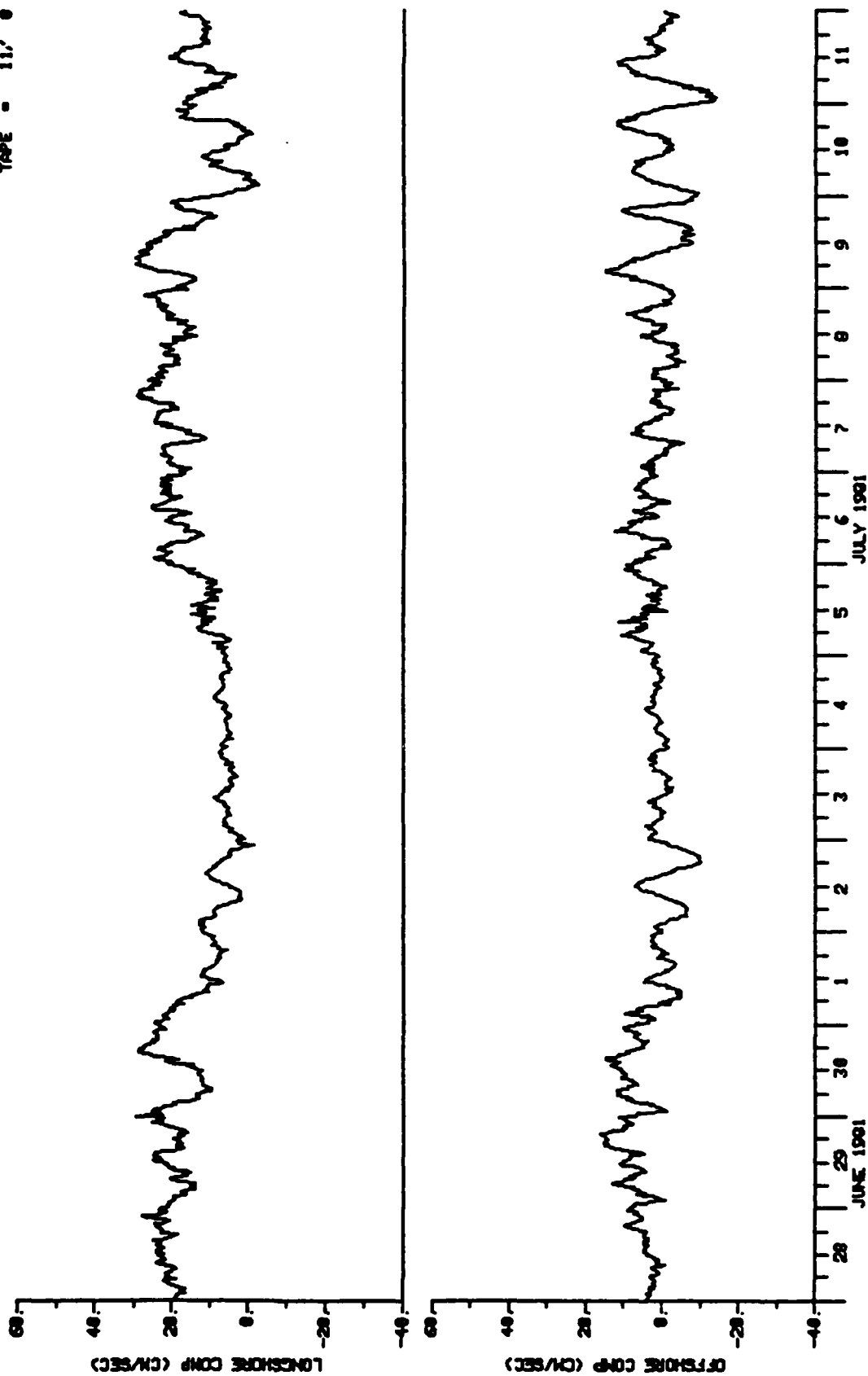
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - 00-1
DEPTH - 48
TAPE - 11/ 8



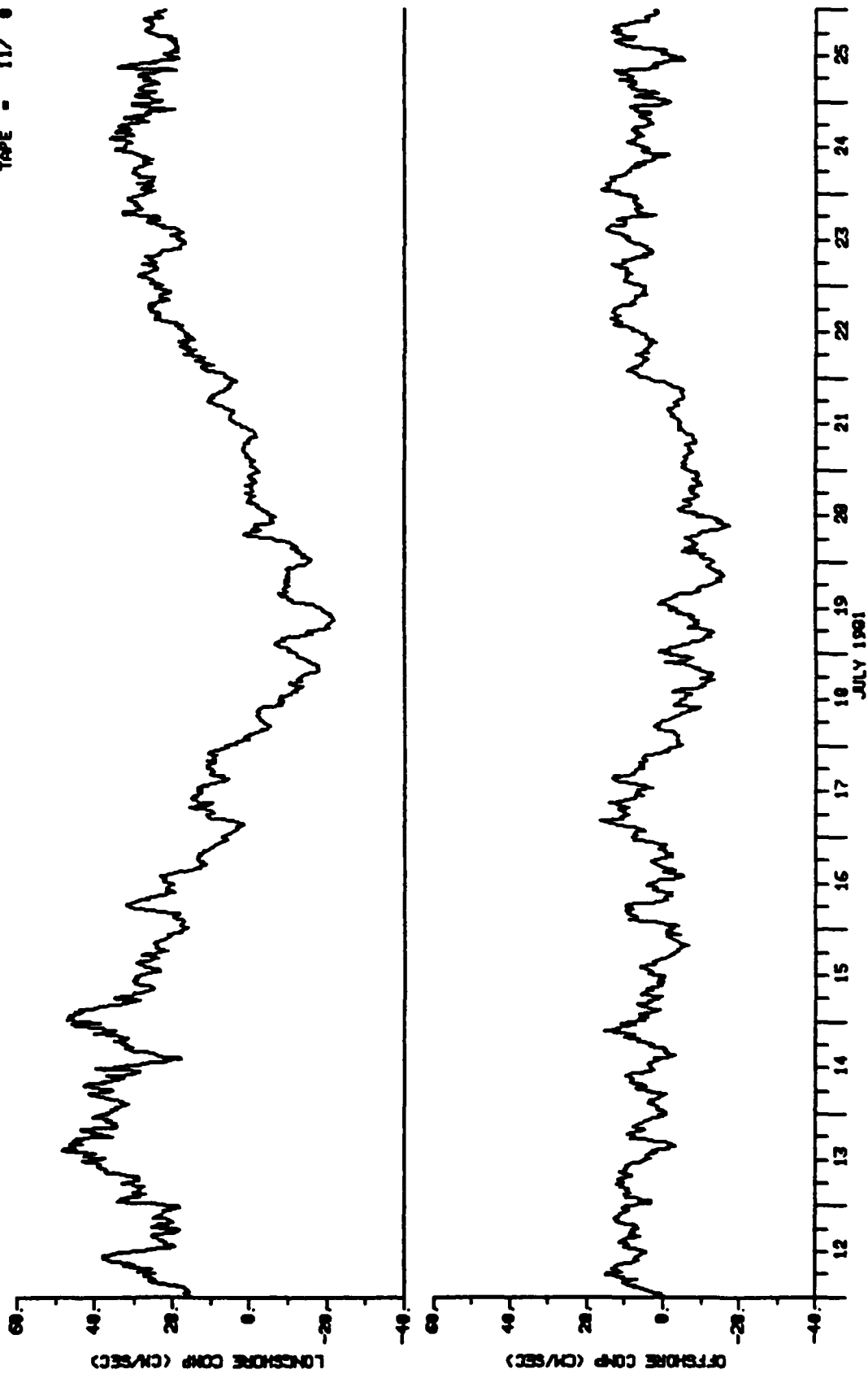
USCG BEAUFORT SEA STUDY

PAGE - 7
STNID - CO-1
DEPTH - 48
TAPE - 11, 0



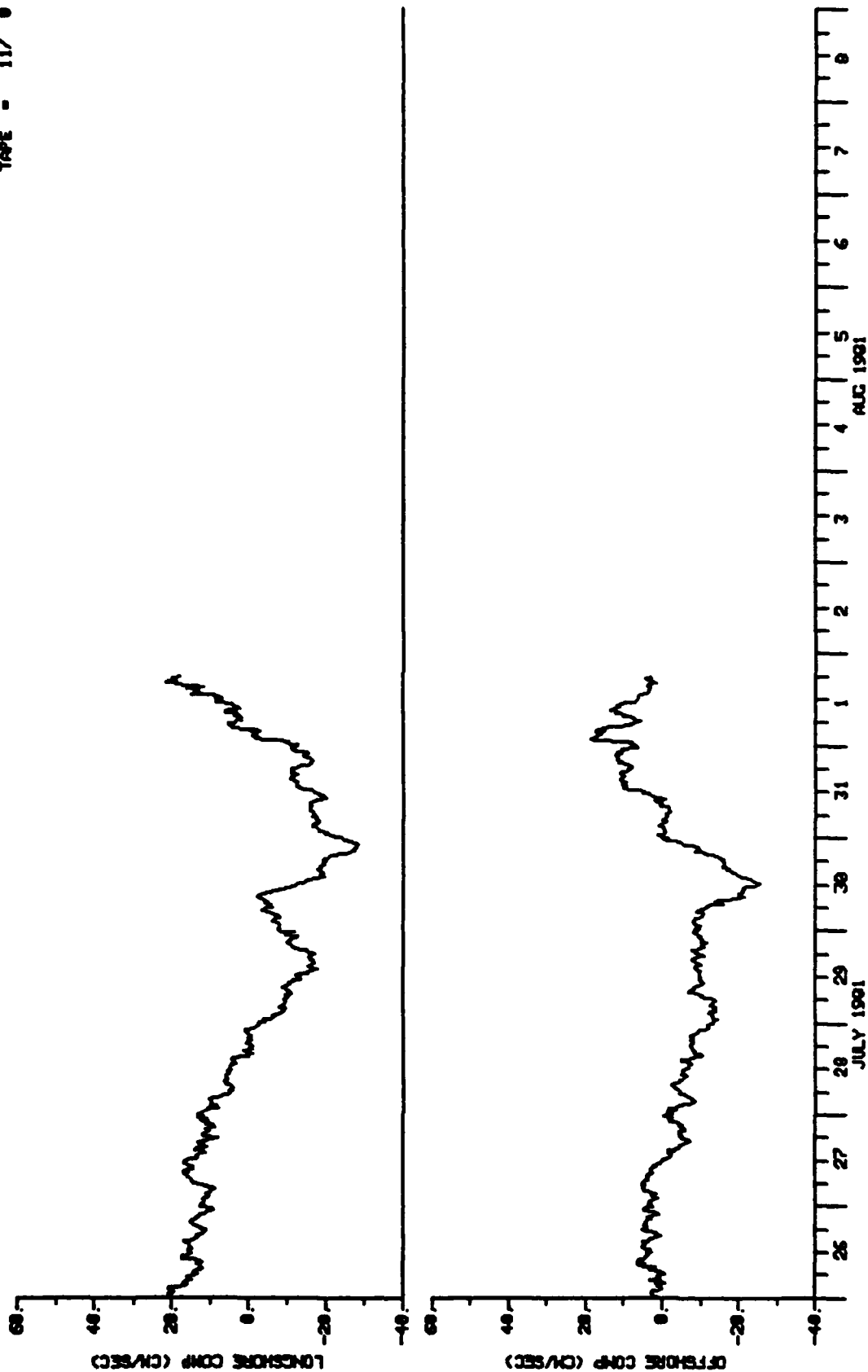
USCG BEAUFORT SEA STUDY

PAGE - 8
STNID - 00-1
DEPTH - 40
TAPE - 11/ 8



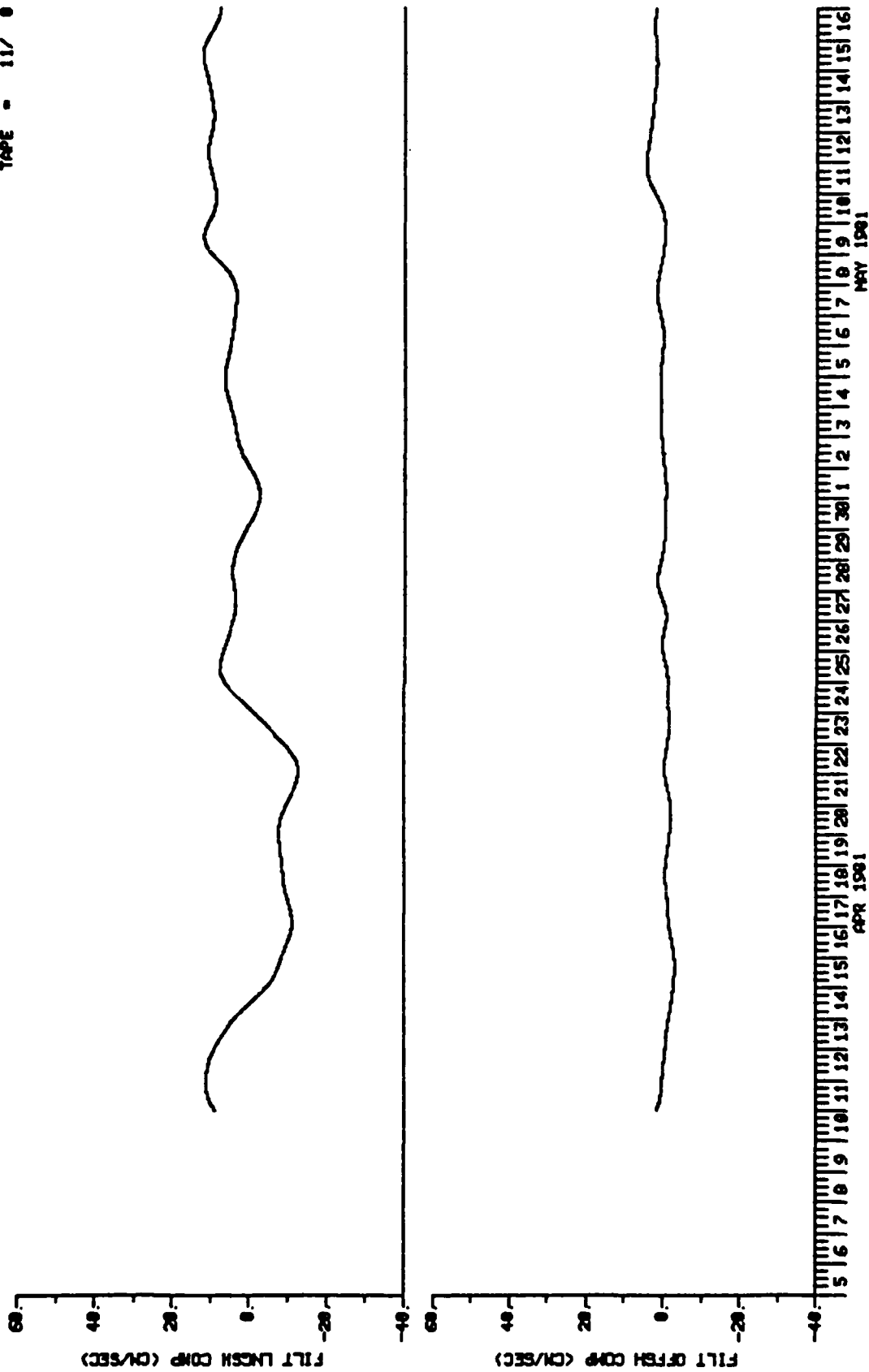
USCG BEAUFORT SEA STUDY

PAGE - CO-1
STNID - 48
DEPTH - 11/
TAPE - 0



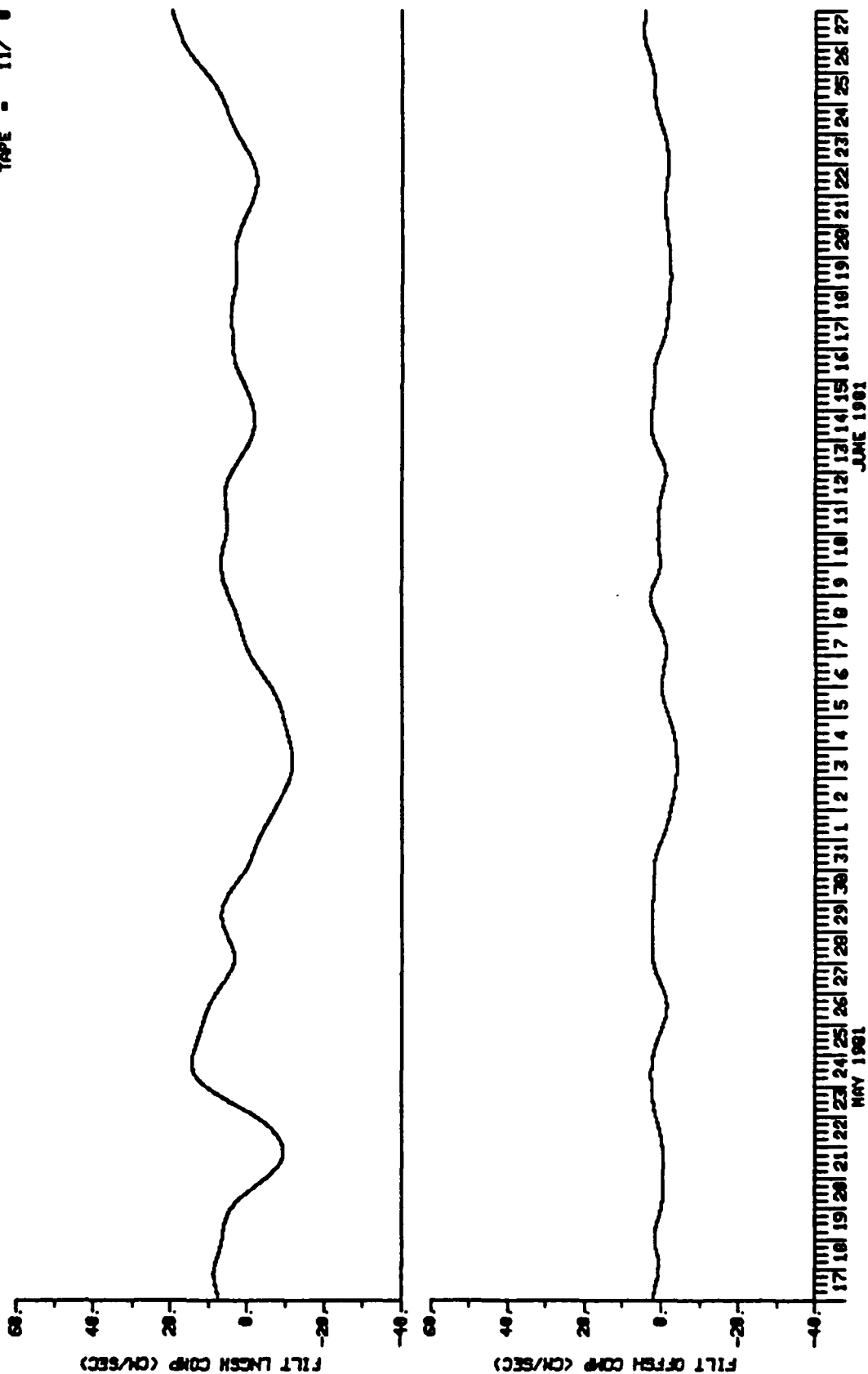
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CG-1
 ELEV - 48
 TAPE - 11/ 8



USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - 00-1
 ELEV - 40
 TAPE - 11/ 0

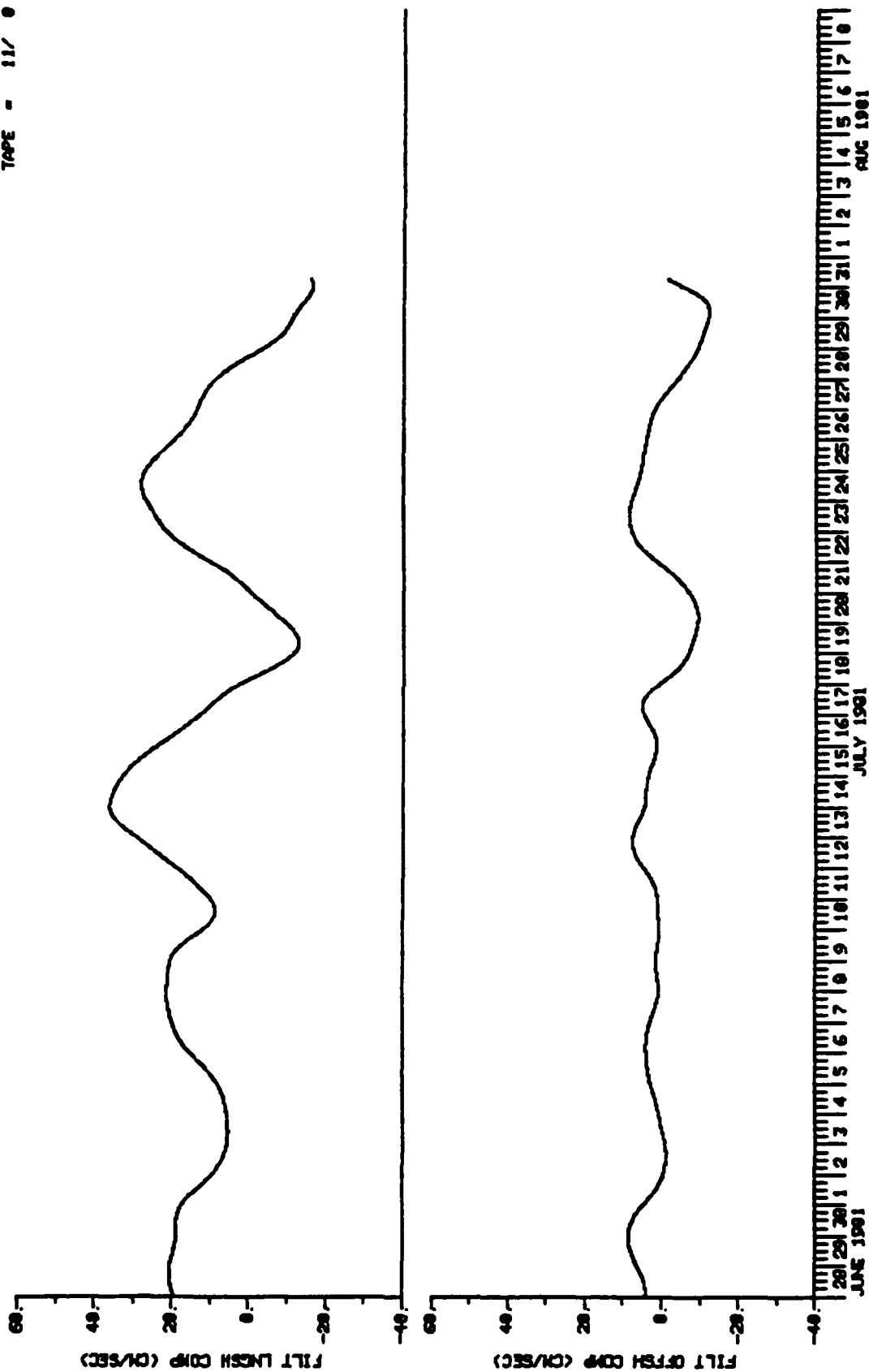


JUNE 1981

MAY 1981

USCG BEAUFORT SEA STUDY

PAGE - 3
 STN13 - 00-1
 ELEV - 40
 TAPE - 11/ 0



CG12

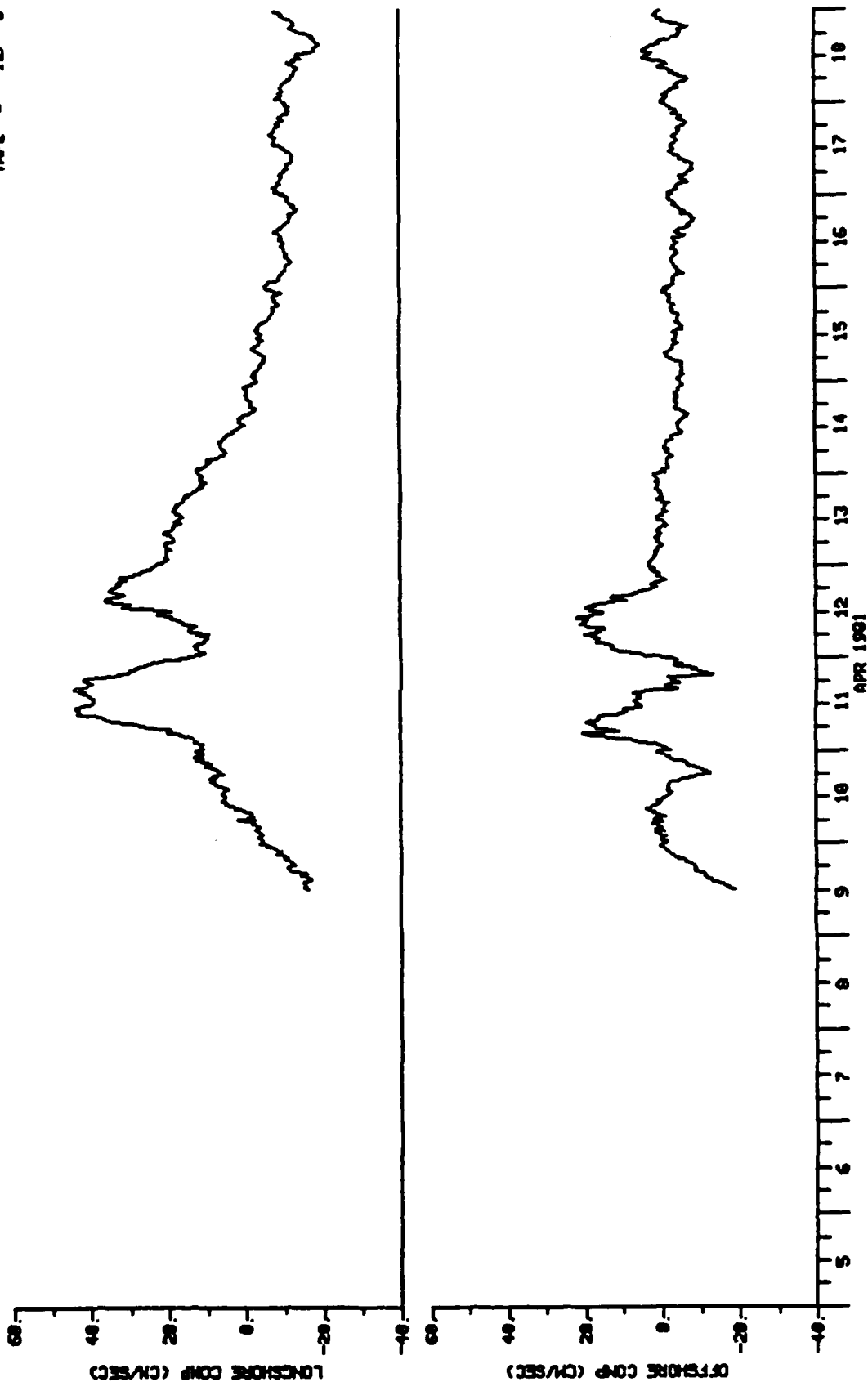
150 m depth
70° 53.0' N 145° 55.3' W
9 April 1981 to 1 August 1981
Longshore direction is 118° T
Offshore direction is 028° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godín, 1972)

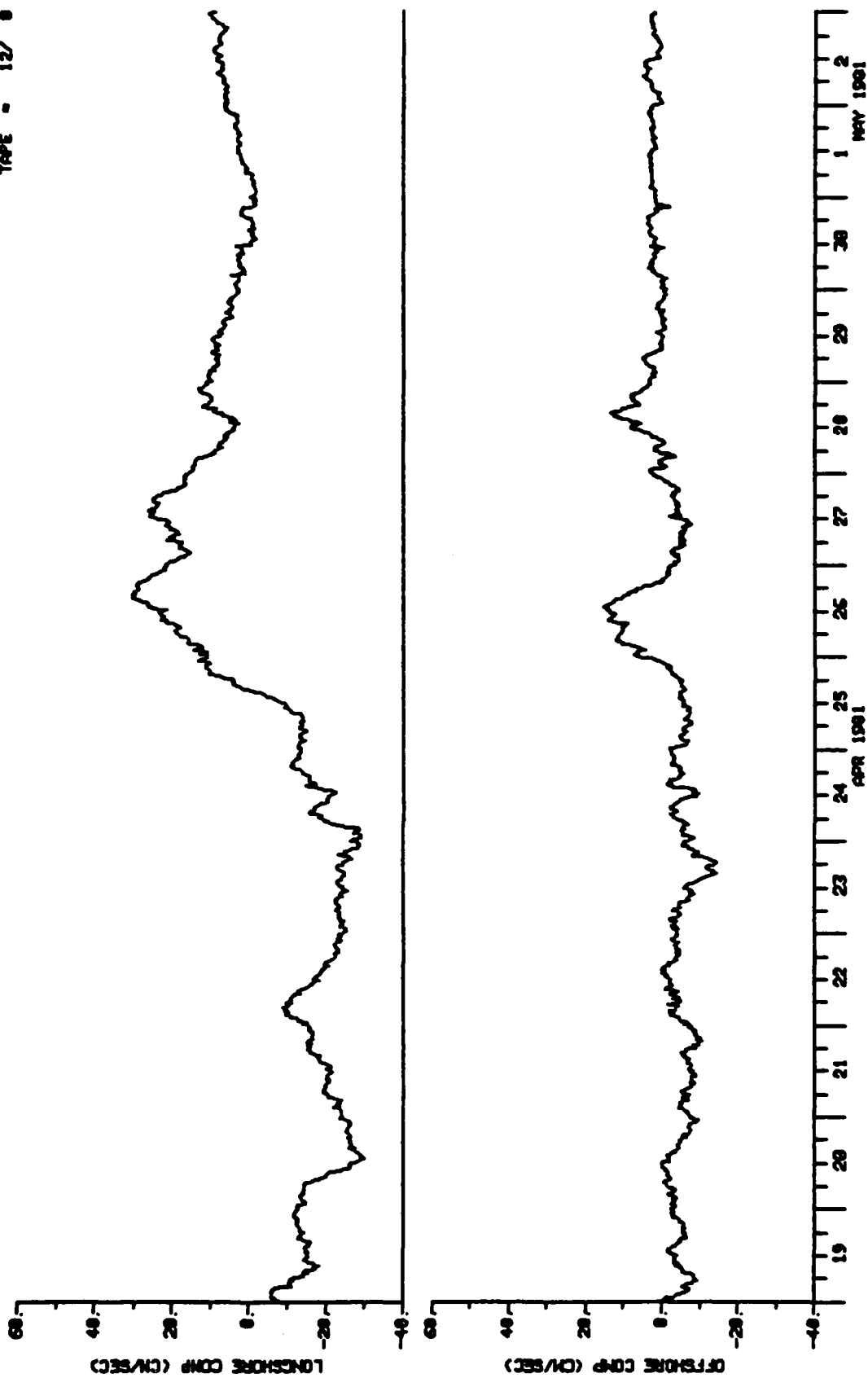
USCG BEAUFORT SEA STUDY

PAGE - 1
STATION - CO-1
DEPTH - 150
TAPE - 12/ 8



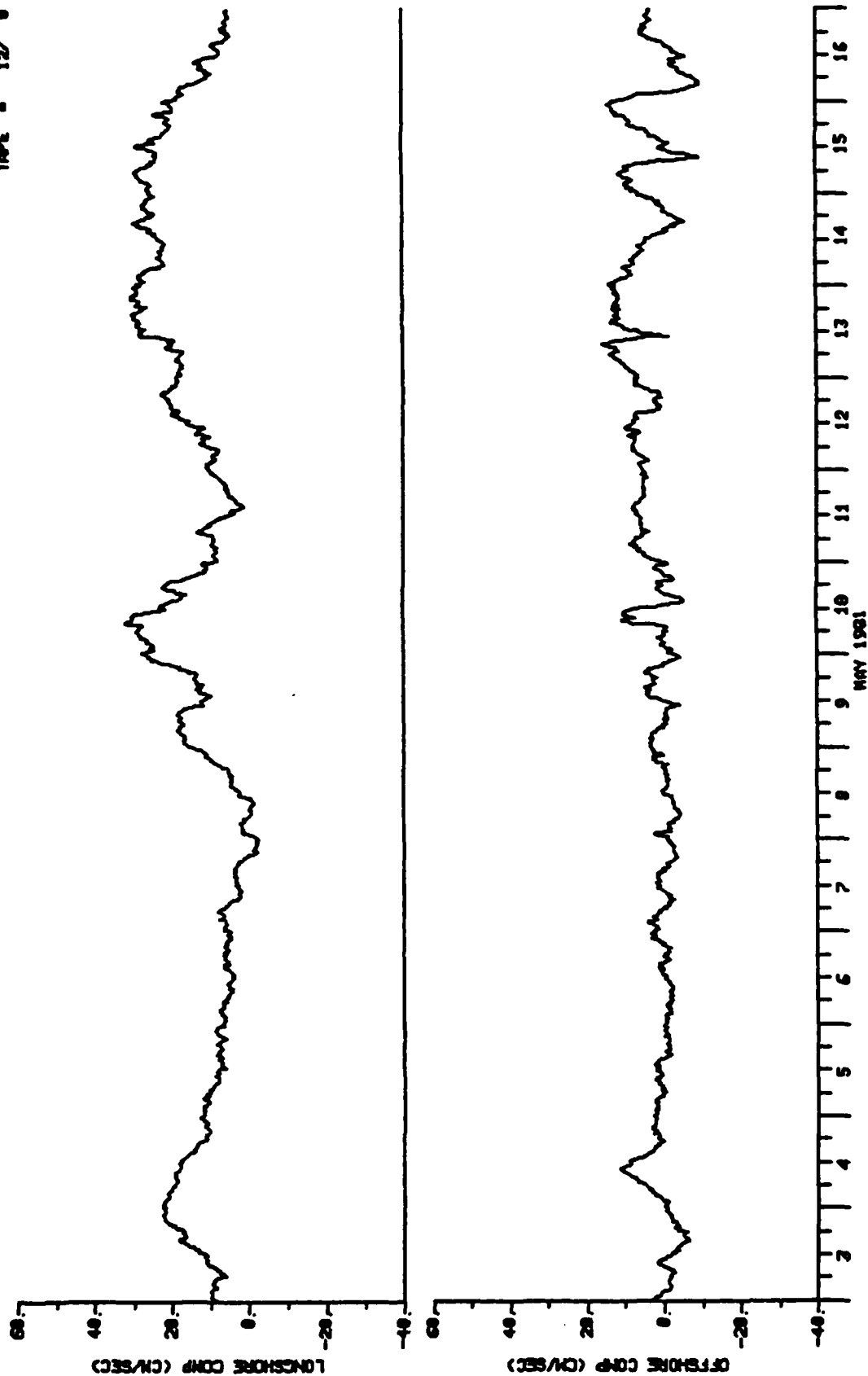
USCG BEAUFORT SEA STUDY

PAGE - 2
STATION - CO-1
DEPTH - 150
TAPE - 12/ 8



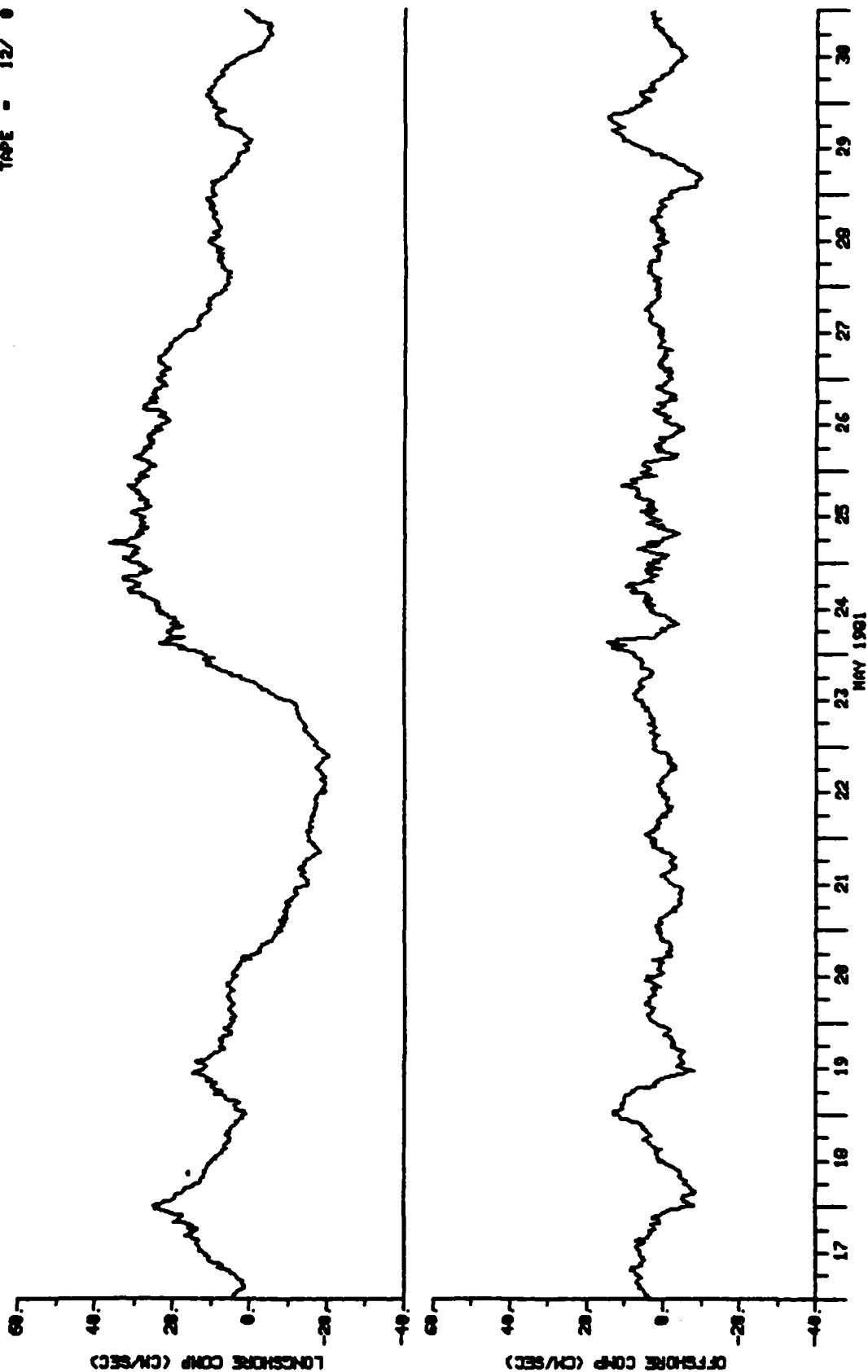
USCG BEAUFORT SEA STUDY

PAGE = 3
STATION = CG-1
DEPTH = 150
TAPE = 12/0



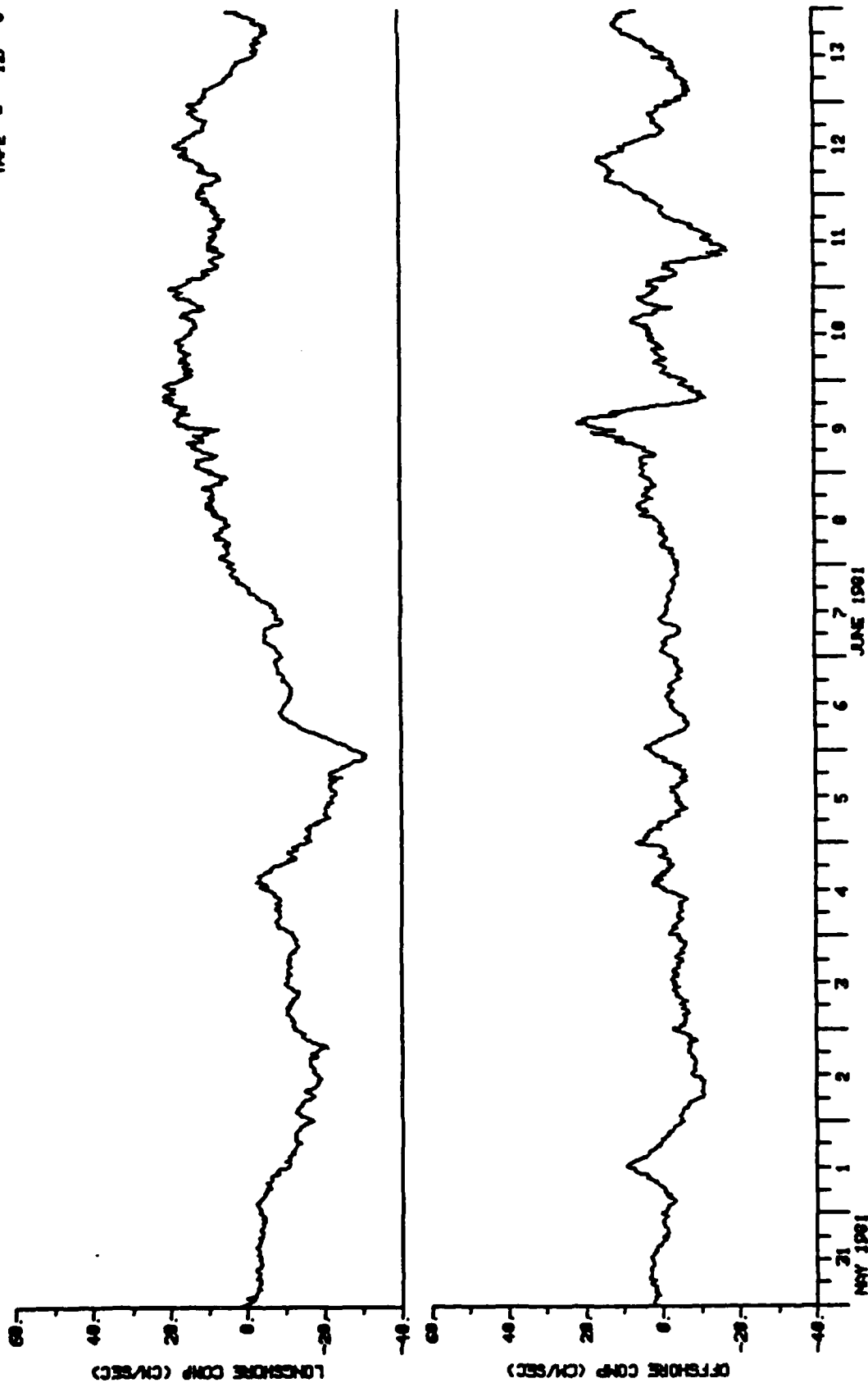
USCG BEAUFORT SEA STUDY

PAGE - 4
STATION - CD-1
DEPTH - 150
TAPE - 12/0



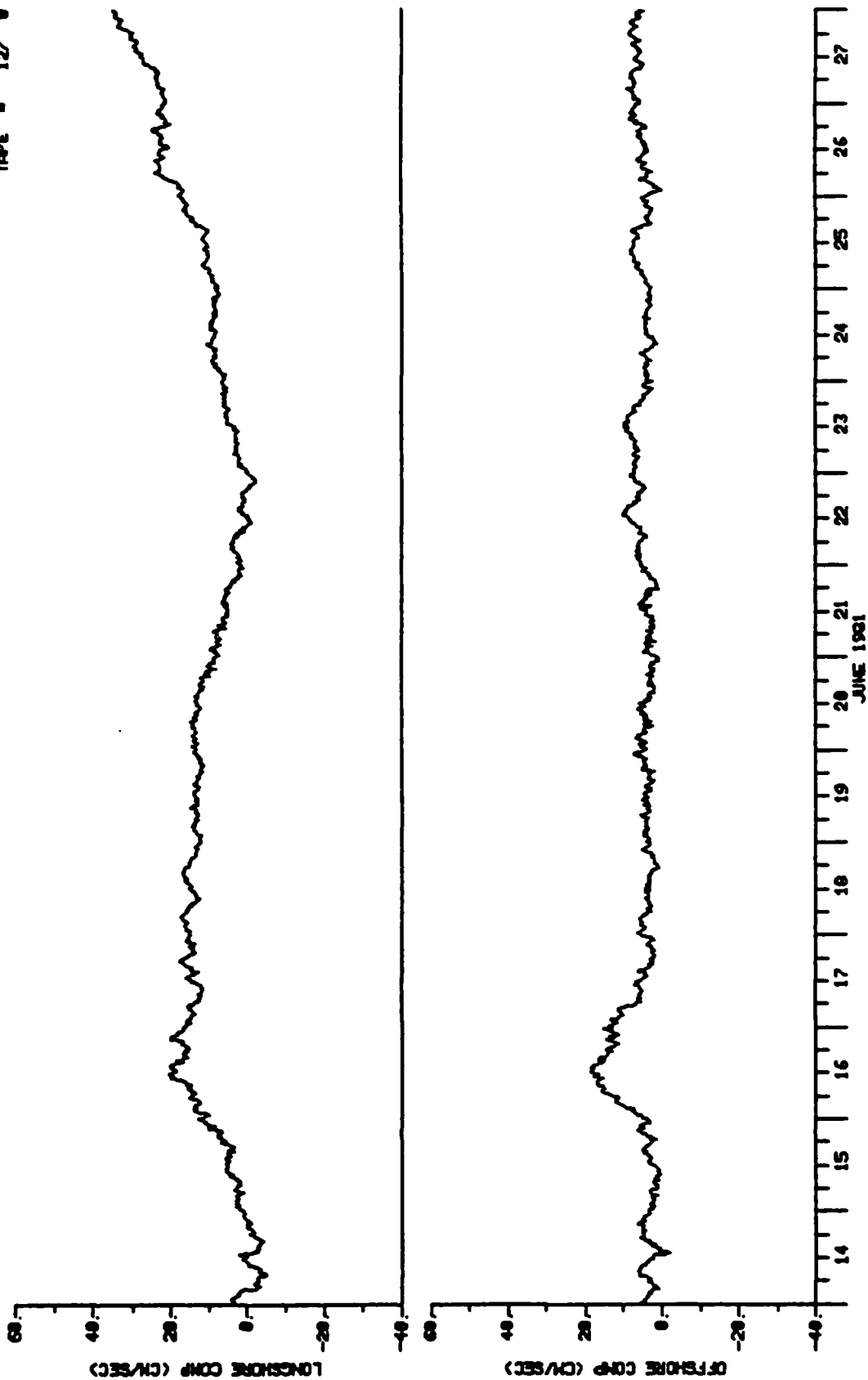
USCG BEAUFORT SEA STUDY

PAGE - 5
STATION - CO-1
DEPTH - 150
TAPE - 12/ 0



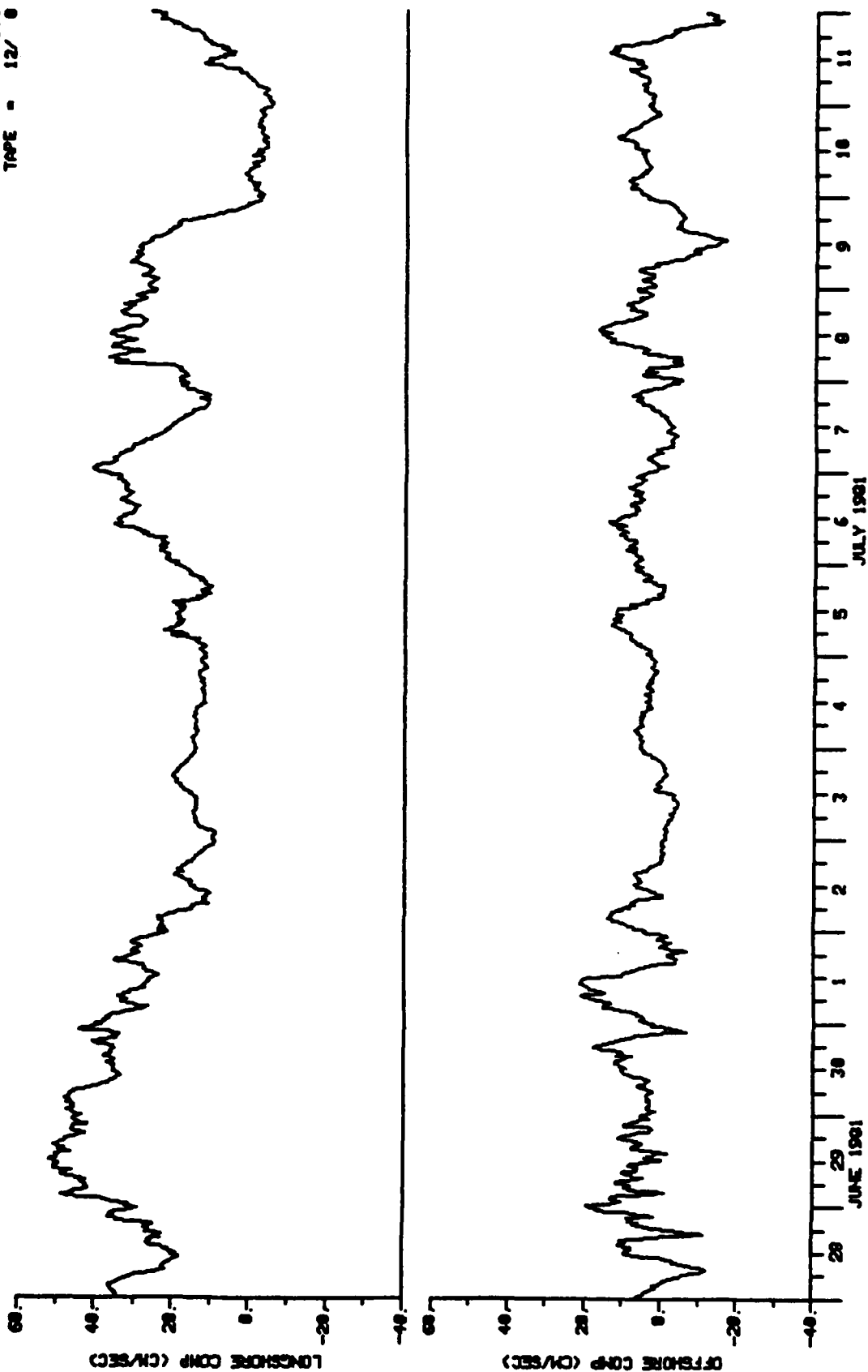
USCG BEAUFORT SEA STUDY

PAGE - 6
STN13 - CO-1
DEPTH - 150
TAPE - 12/0



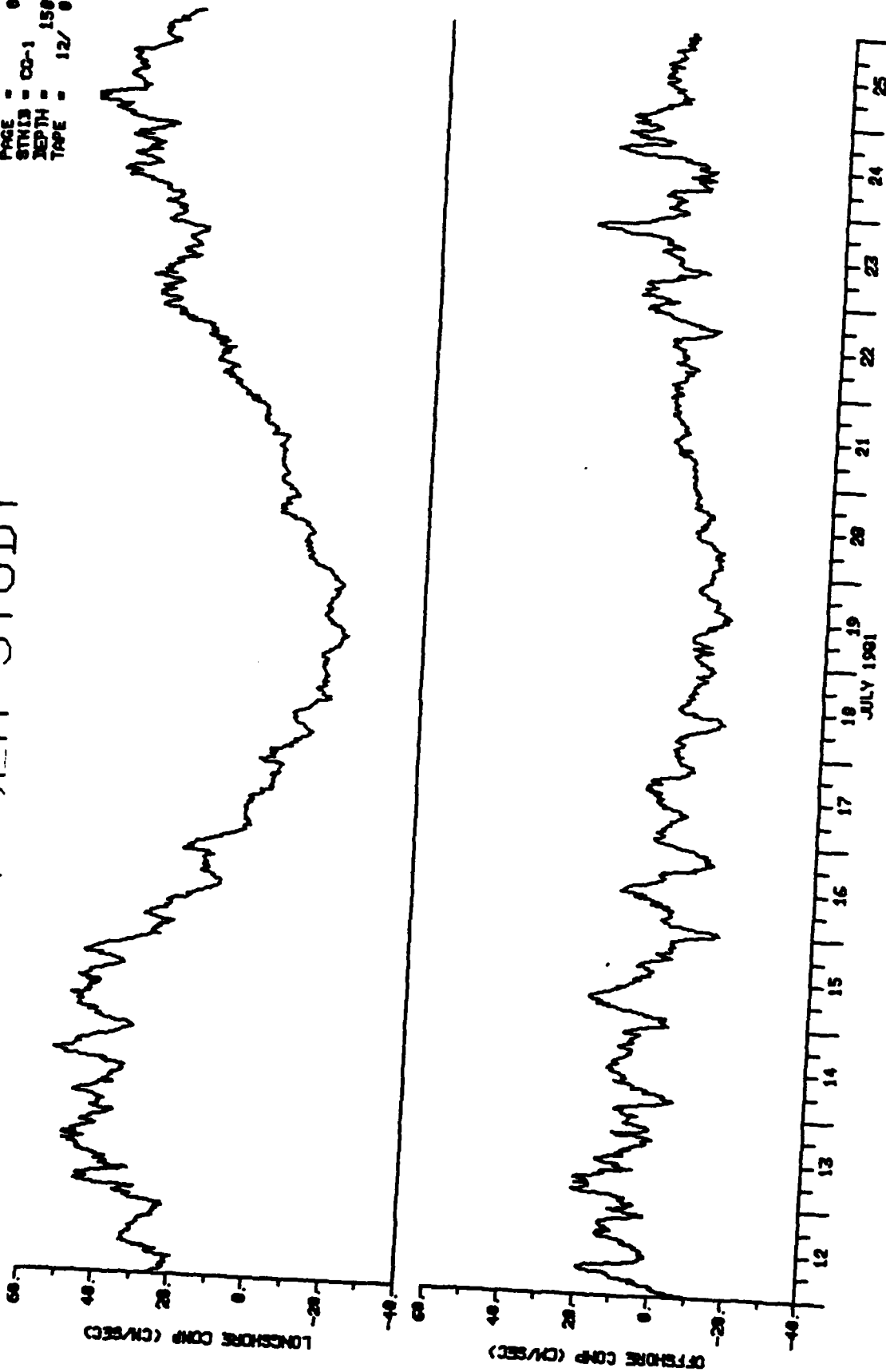
USCG BEAUFORT SEA STUDY

PAGE - 7
STN13 - CO-1
DEPTH - 150
TAPE - 12/ 8



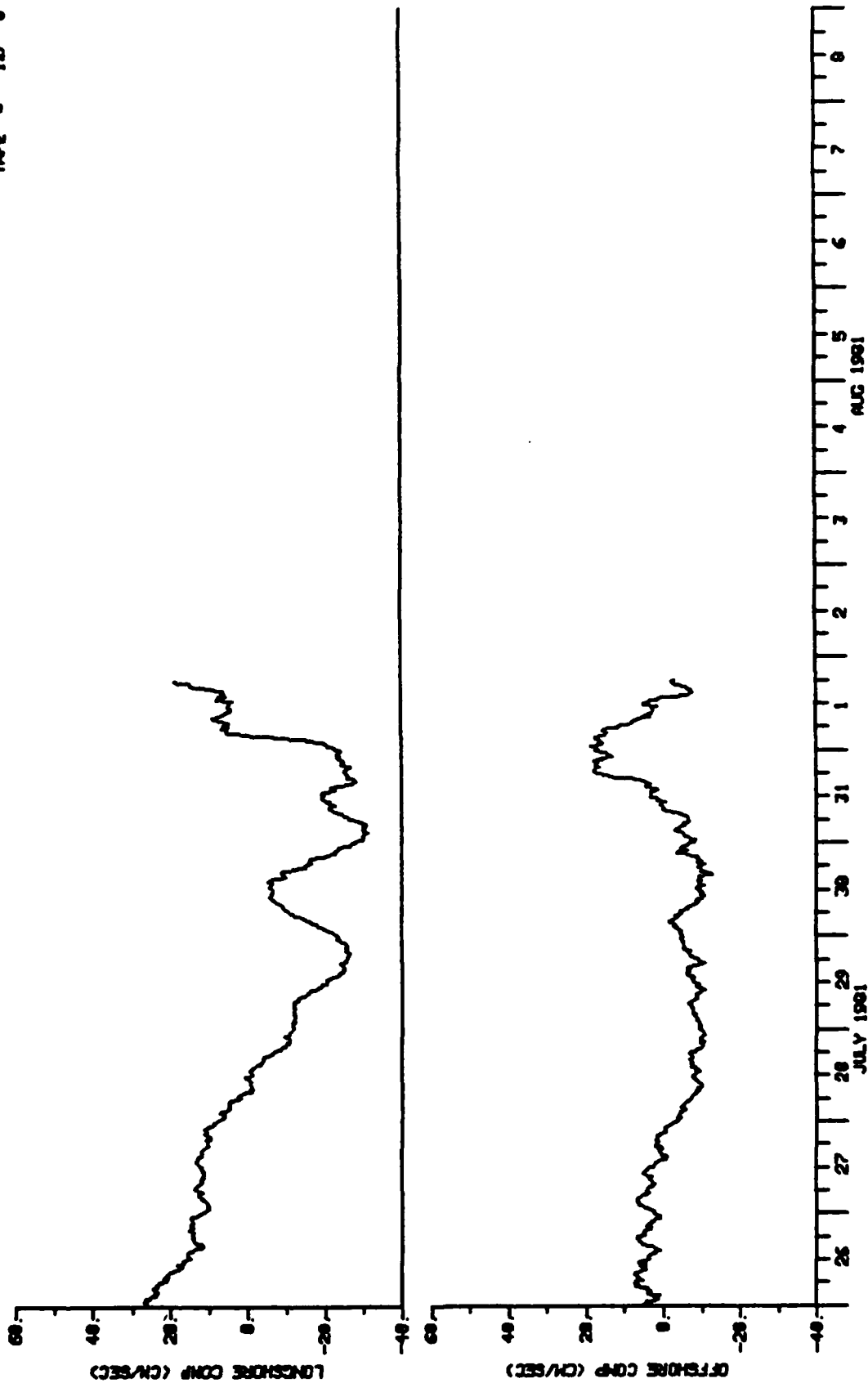
USCG BEAUFORT GEN STUDY

PAGE - 0
STATION - 00-1
DEPTH - 150
TAPE - 12/0



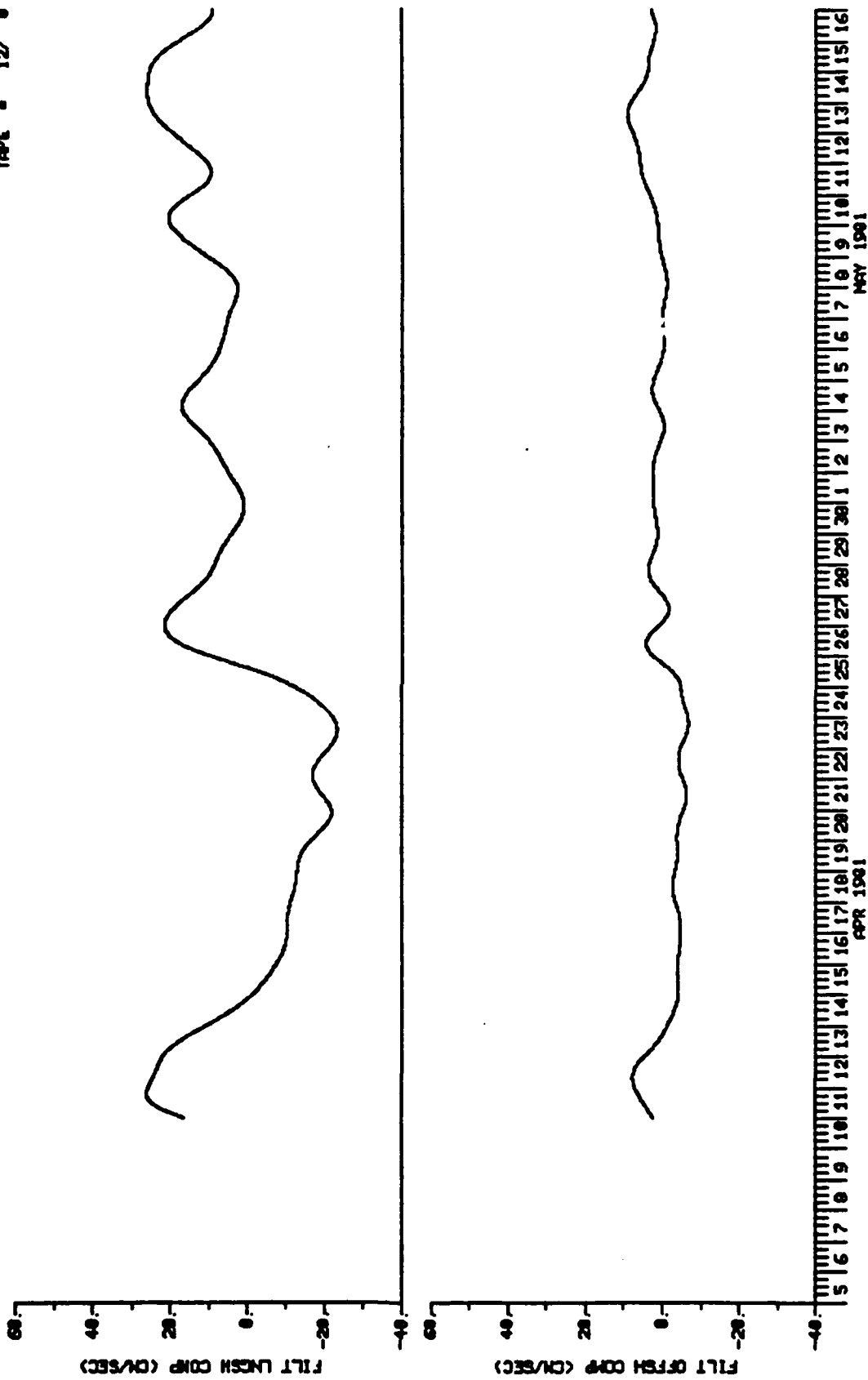
USCG BEAUFORT SEA STUDY

PAGE - 9
STATION - CD-1
DEPTH - 150
TAPE - 12/0



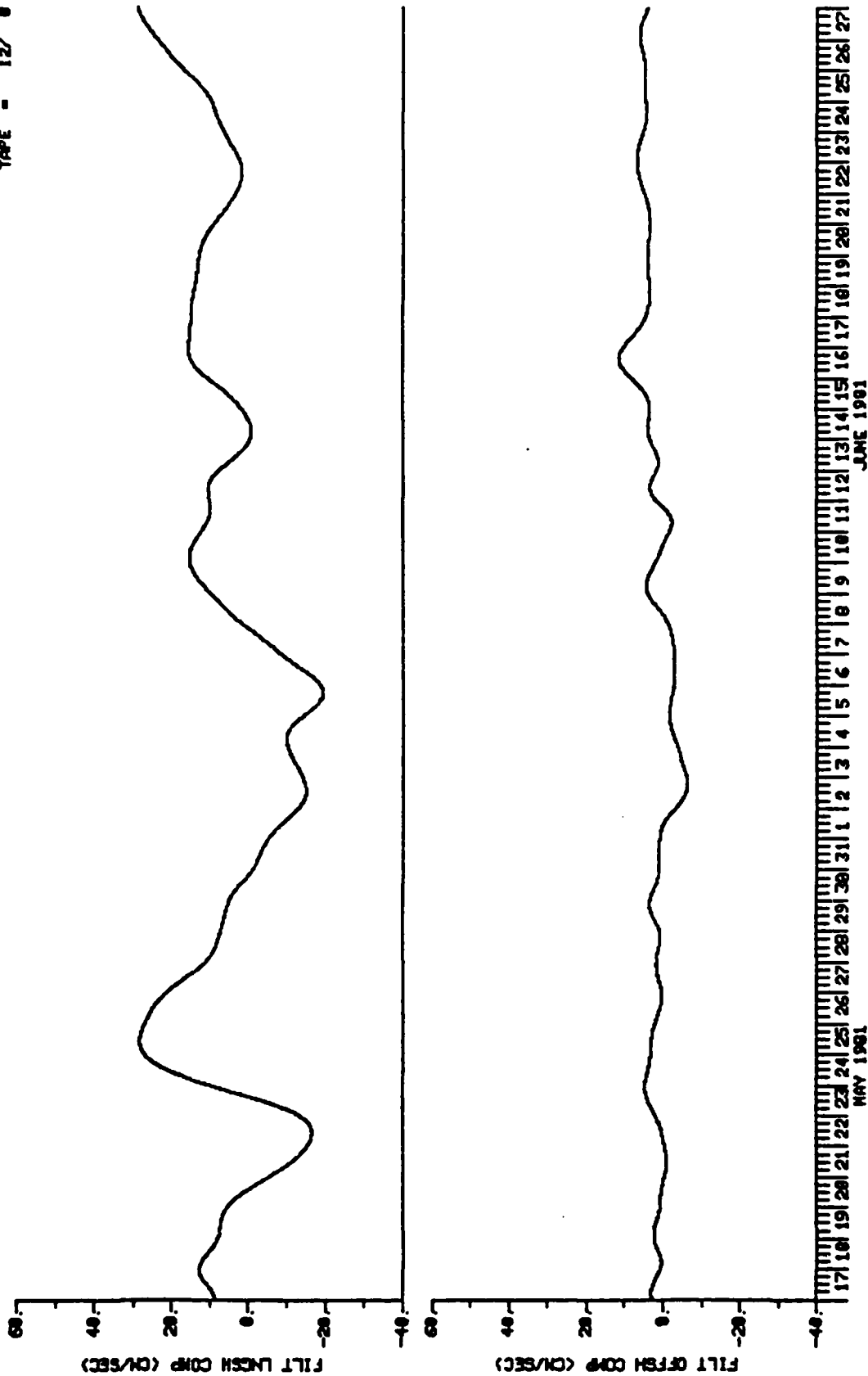
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CG-1
 ELEV - 150
 TAPE - 12/ 8



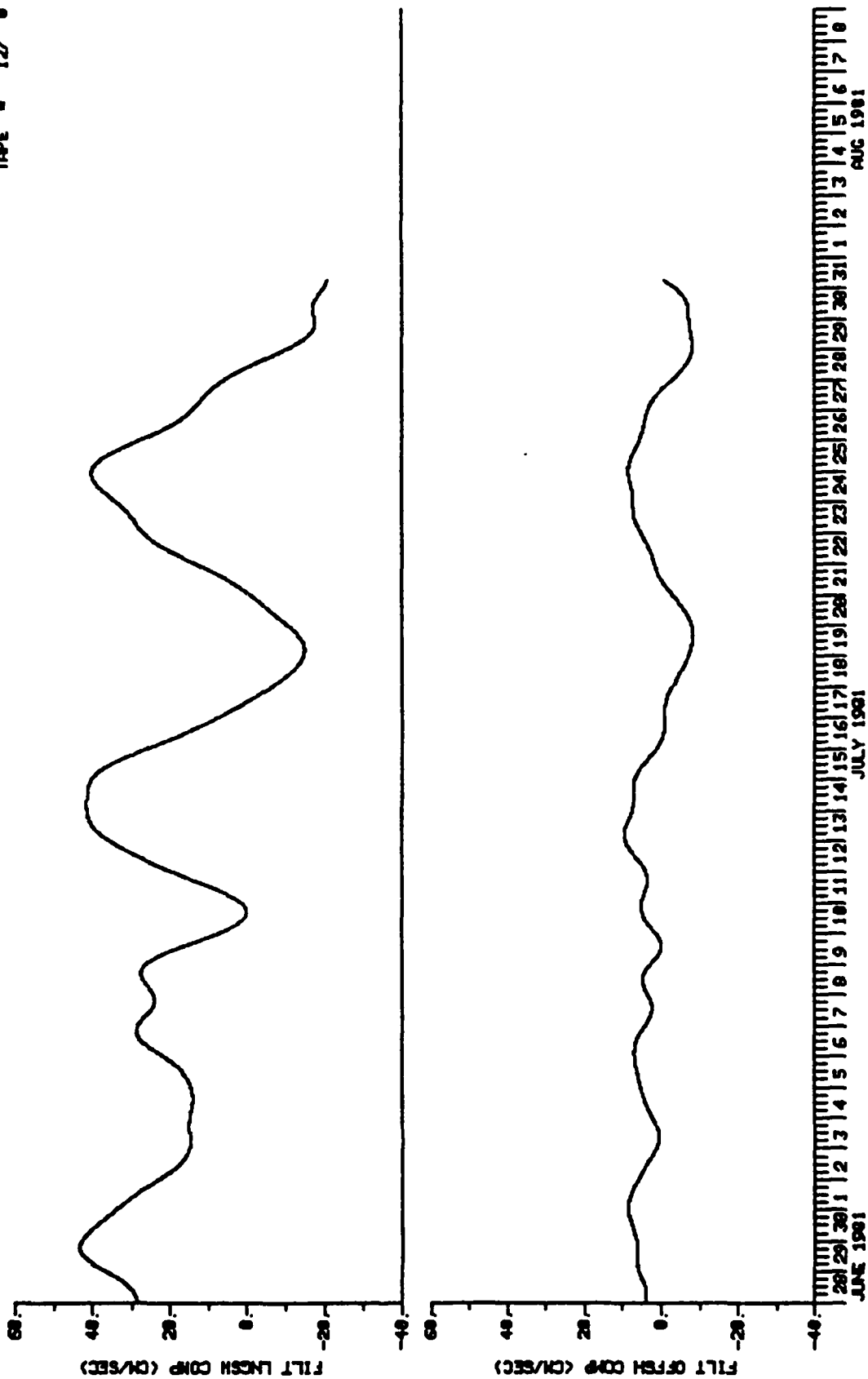
USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - 00-1
 ELEV - 150
 TAPE - 12/ 0



USCG BEAUFORT SEA STUDY

PAGE - 3
 STN13 - CO-1
 ELEV - 150
 TAPE - 12/ 0



CG21

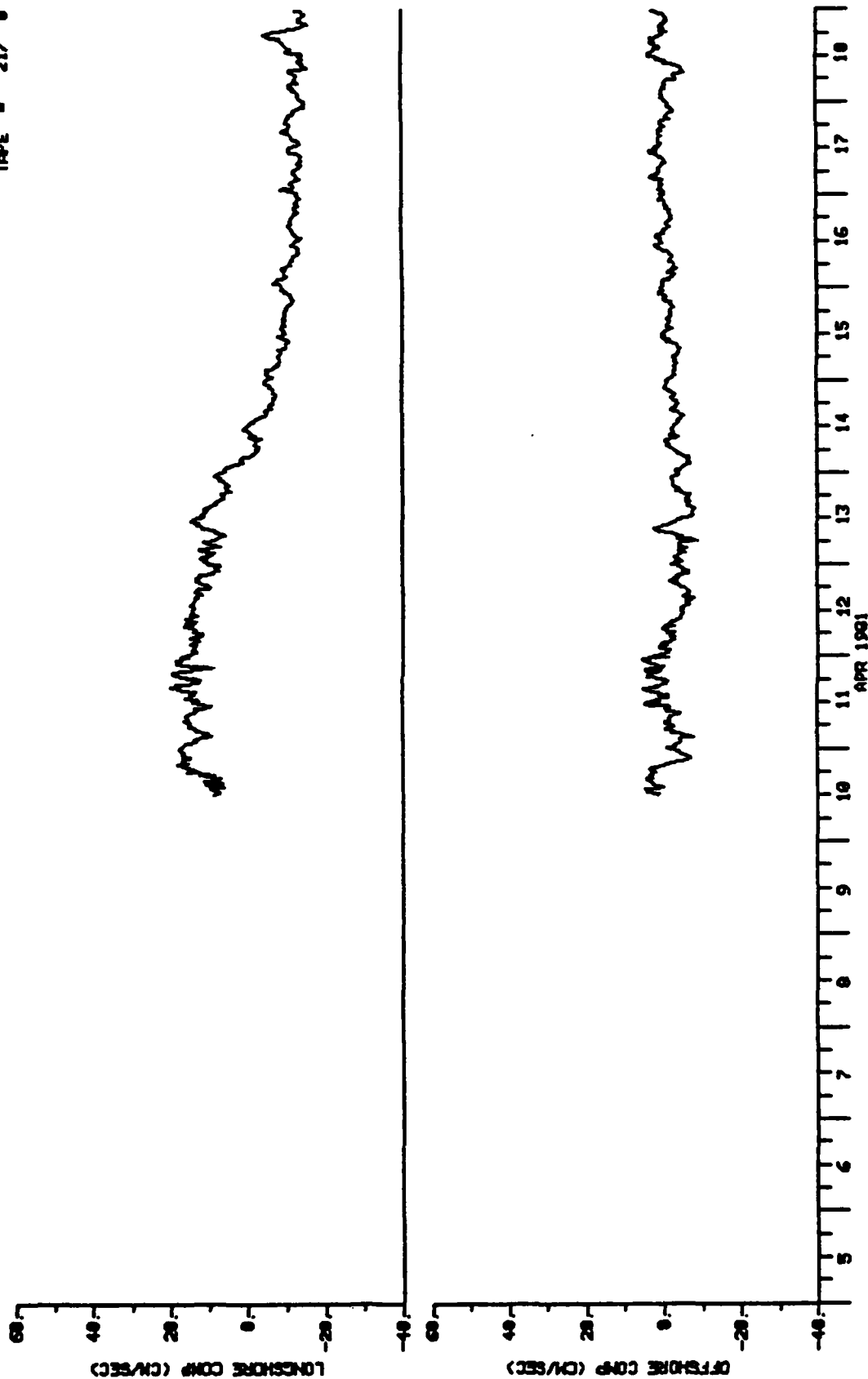
40 m depth
70° 56.4' N 146° 00.6' W
10 April 1981 to 1 August 1981
Longshore direction is 118° T
Offshore direction is 028° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

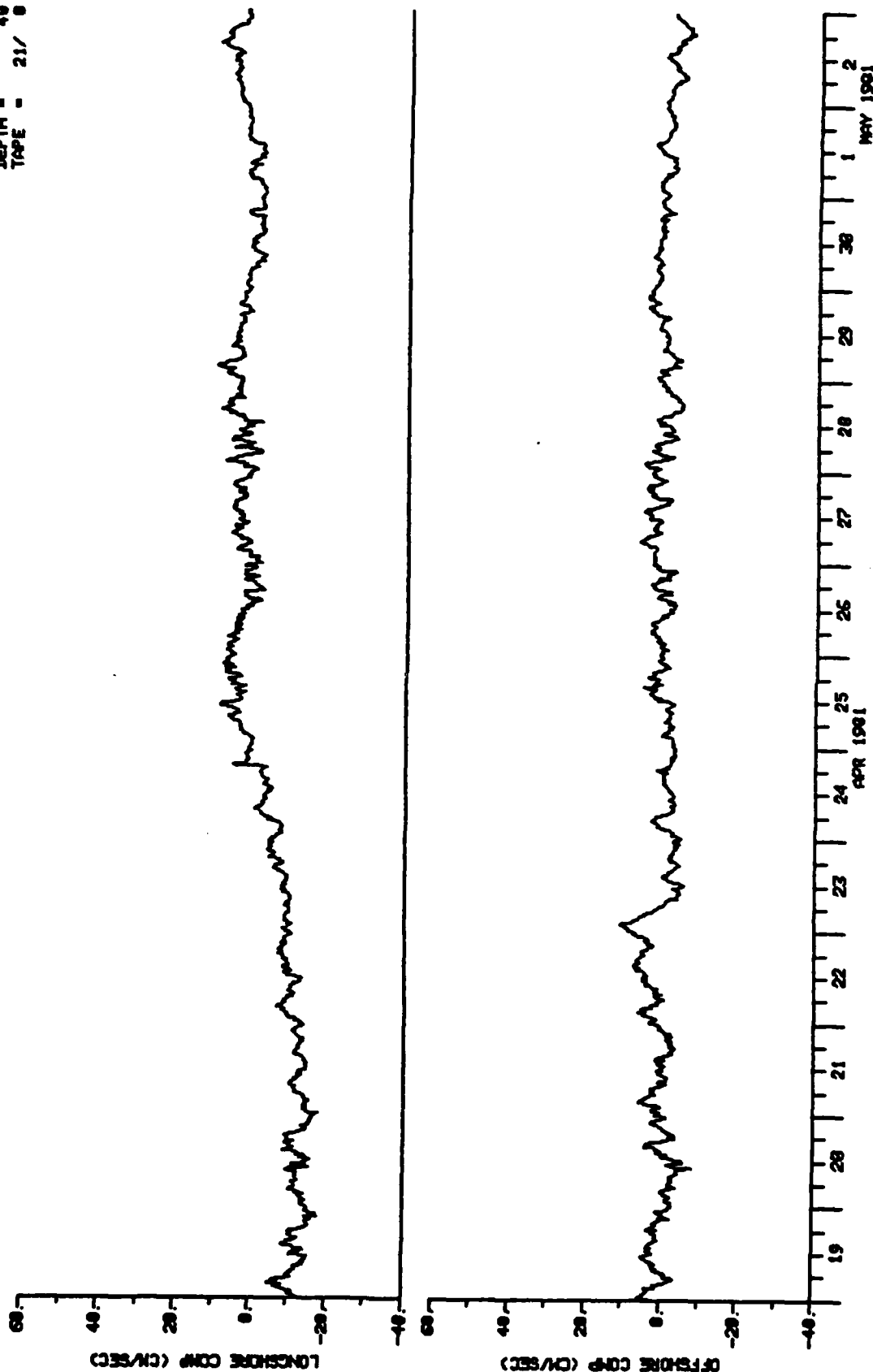
USCG BEAUFORT SEA STUDY

PAGE = 1
STNID = CG-2
DEPTH = 48
TAPE = 21/ 8



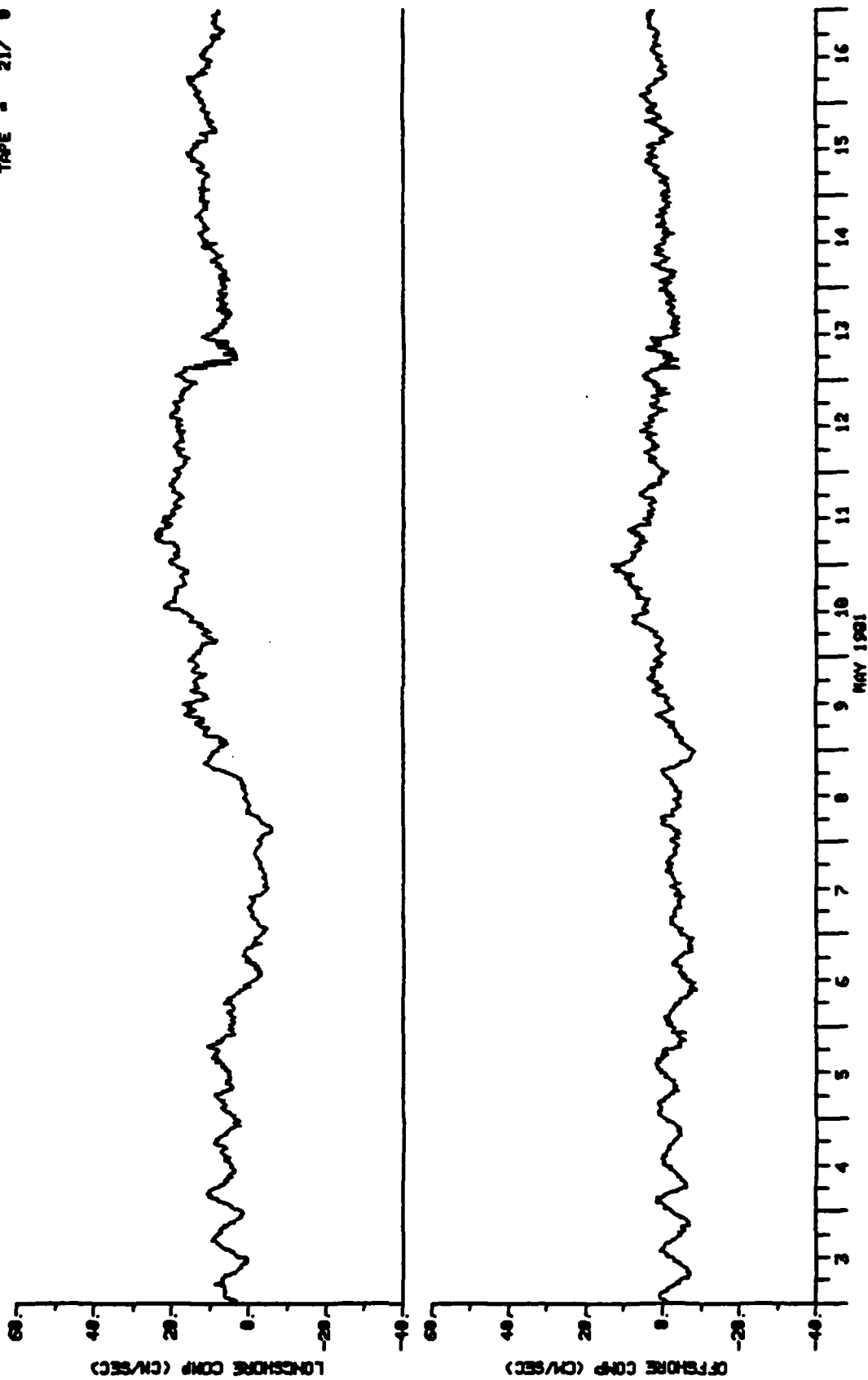
USCG BEAUFORT SEA STUDY

PAGE - 2
STATION - CC-2
DEPTH - 40
TAPE - 21/ 8



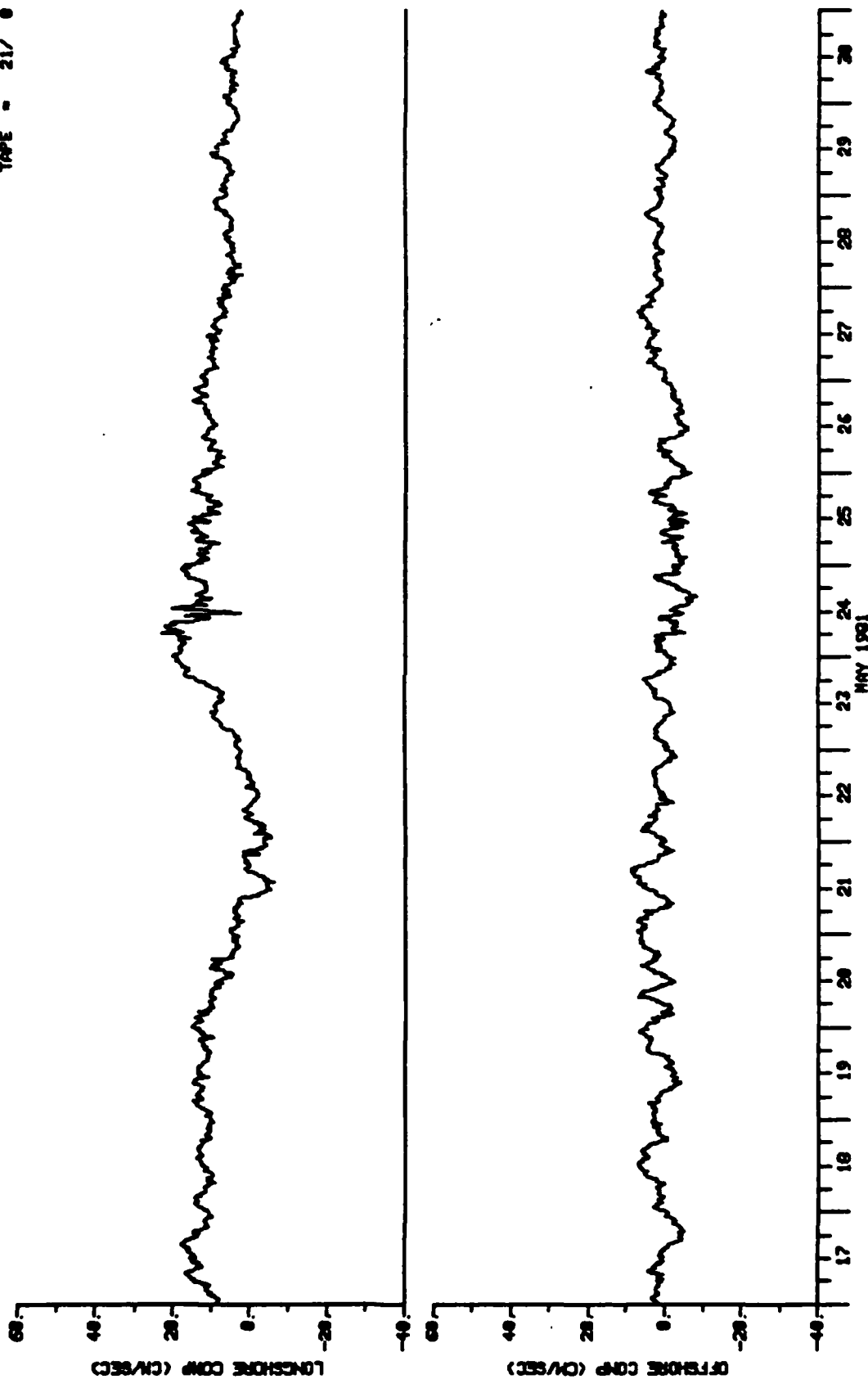
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CO-2
DEPTH - 40
TAPE - 21/ 0



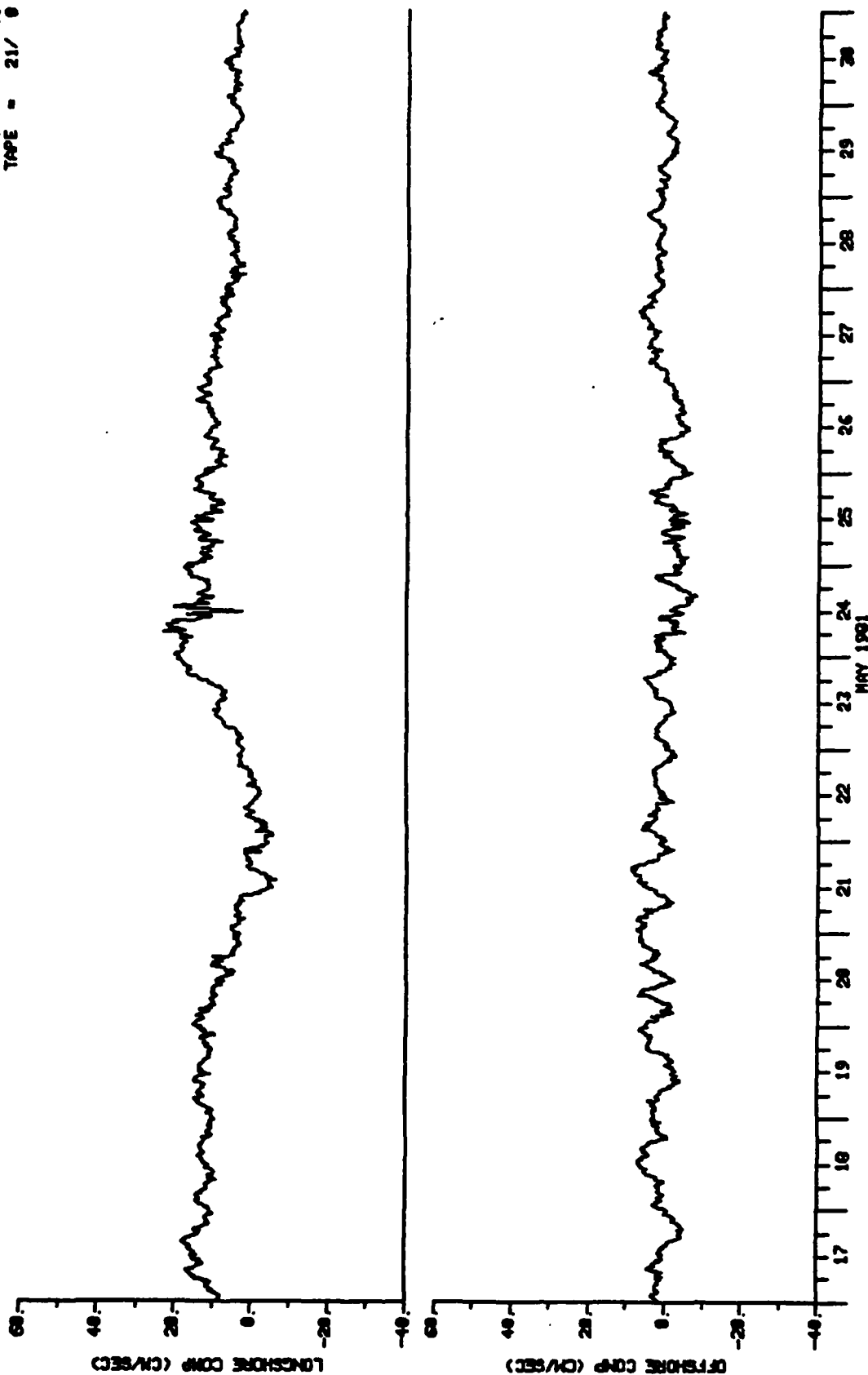
USCG BEAUFORT SEA STUDY

PAGE 4
STN13 - CO-2
DEPTH - 48
TAPE - 21/ 0



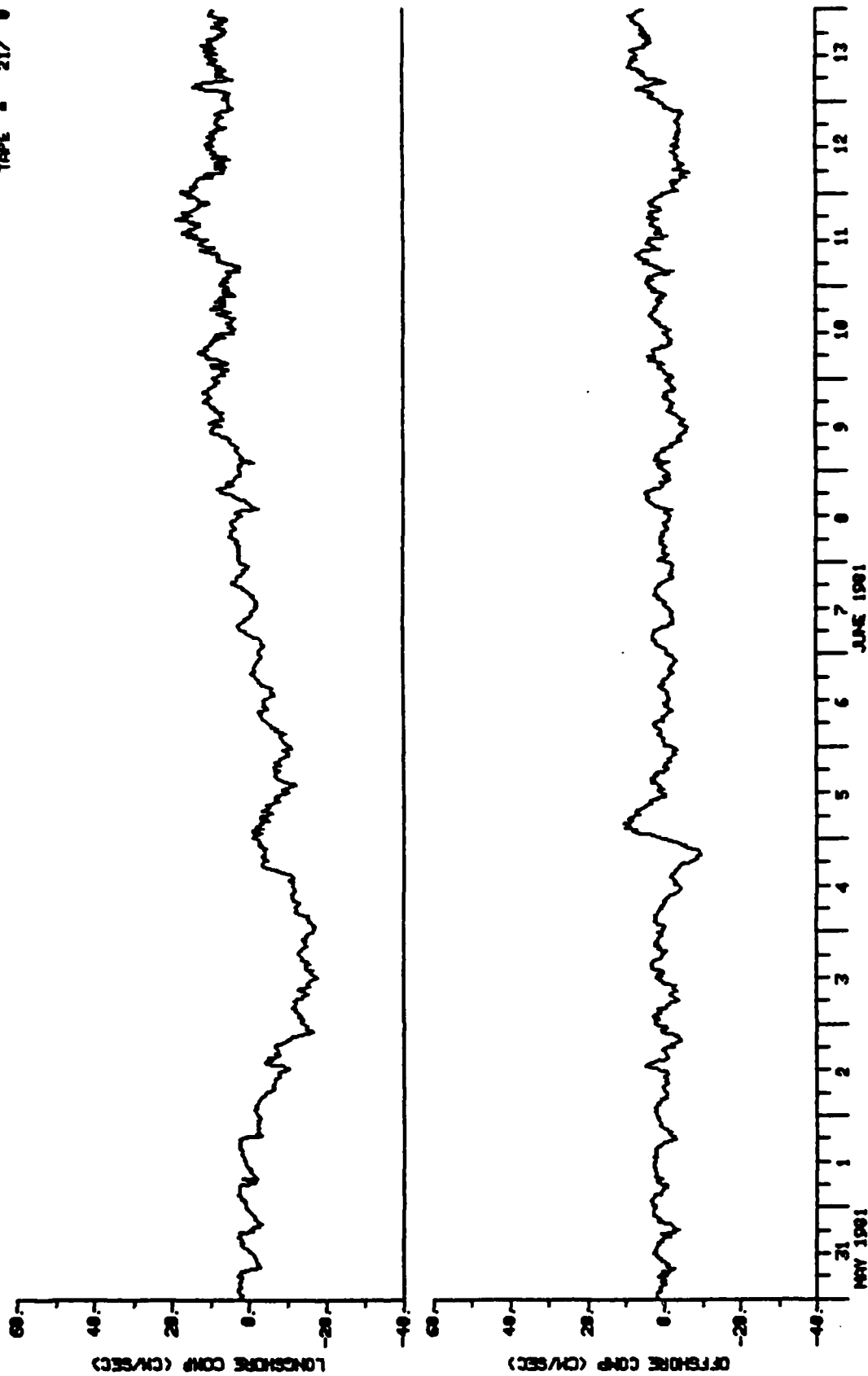
USCG BEAUFORT SEA STUDY

PAGE - 4
STN13 - CO-2
DEPTH - 40
TAPE - 21/ 0



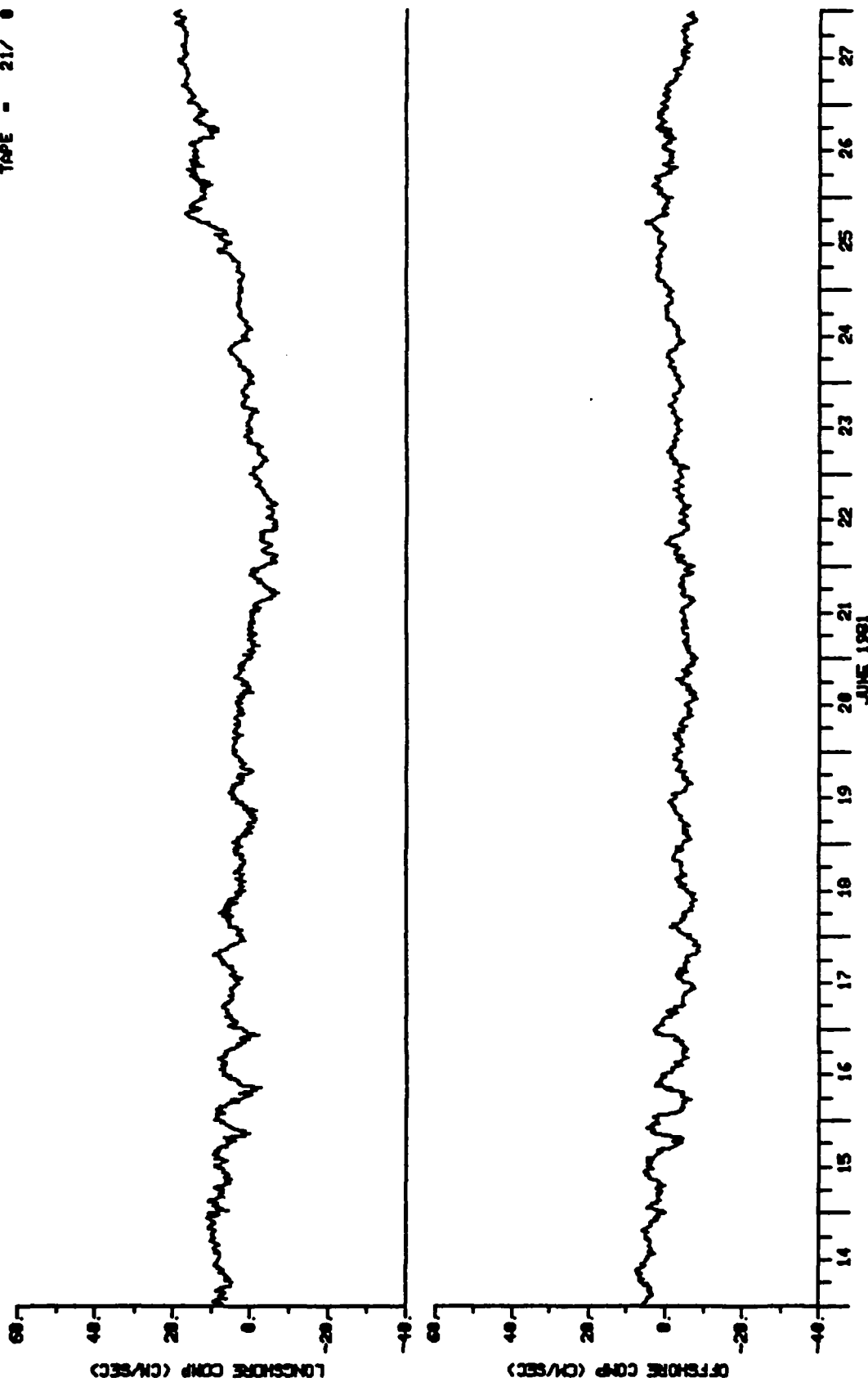
USCG BEAUFORT SEA STUDY

PAGE = 5
STNID = CO-2
DEPTH = 48
TAPE = 21/ 8



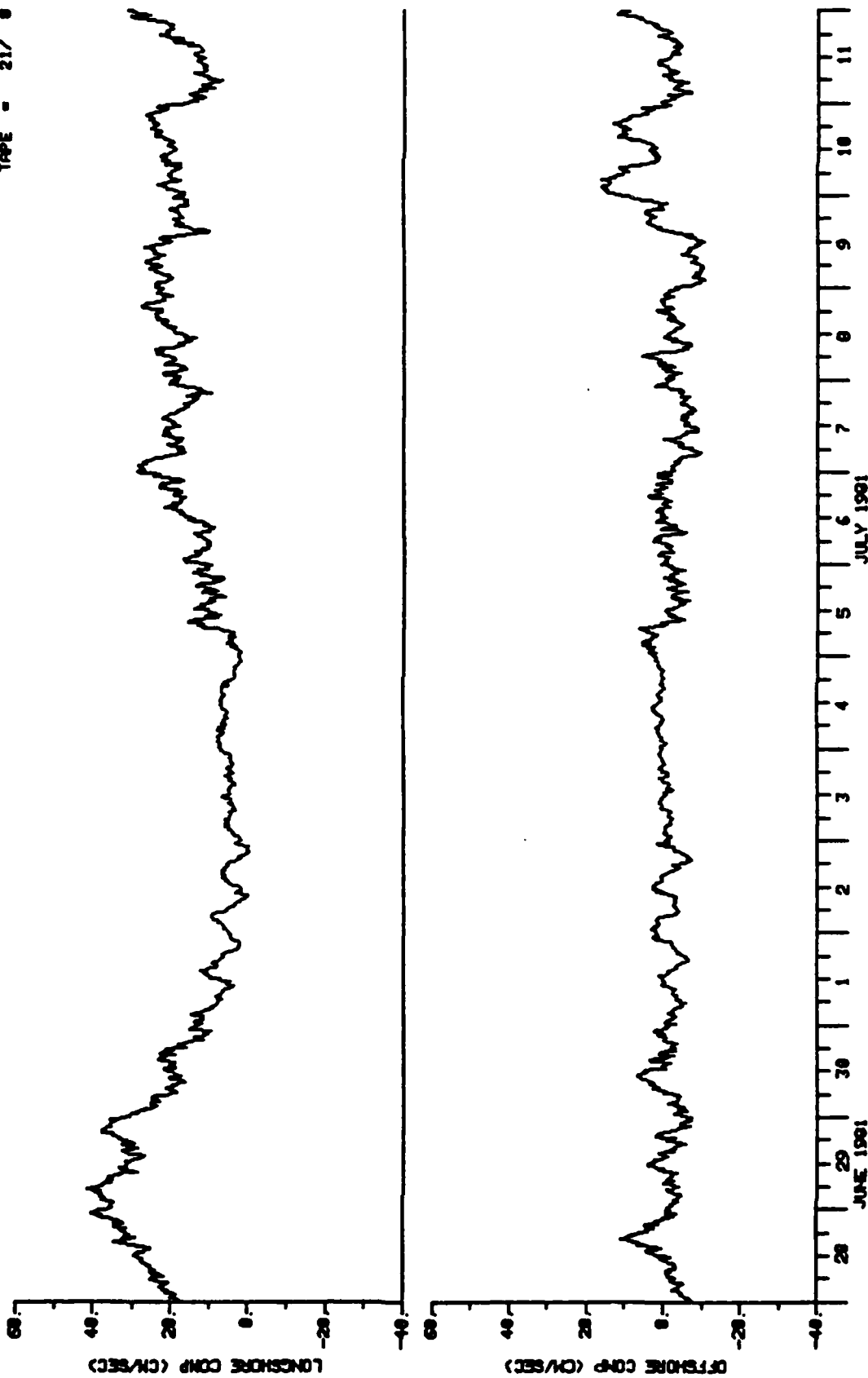
USCG BEAUFORT SEA STUDY

PAGE - 6
STN13 - CO-2
DEPTH - 48
TAPE - 21/ 8



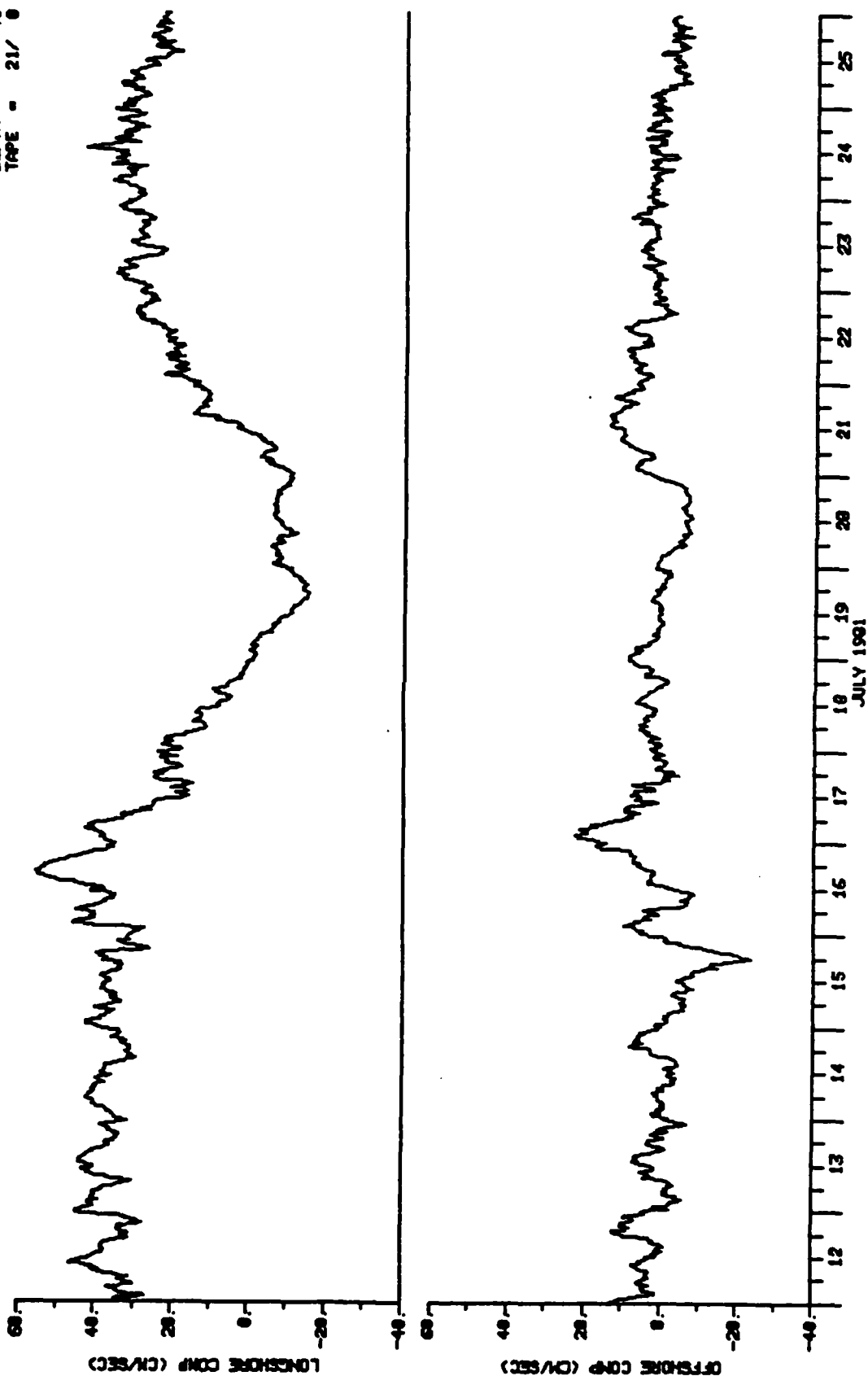
USCG BEAUFORT SEA STUDY

PAGE = 7
STN13 = CO-2
DEPTH = 48
TAPE = 21/ 8



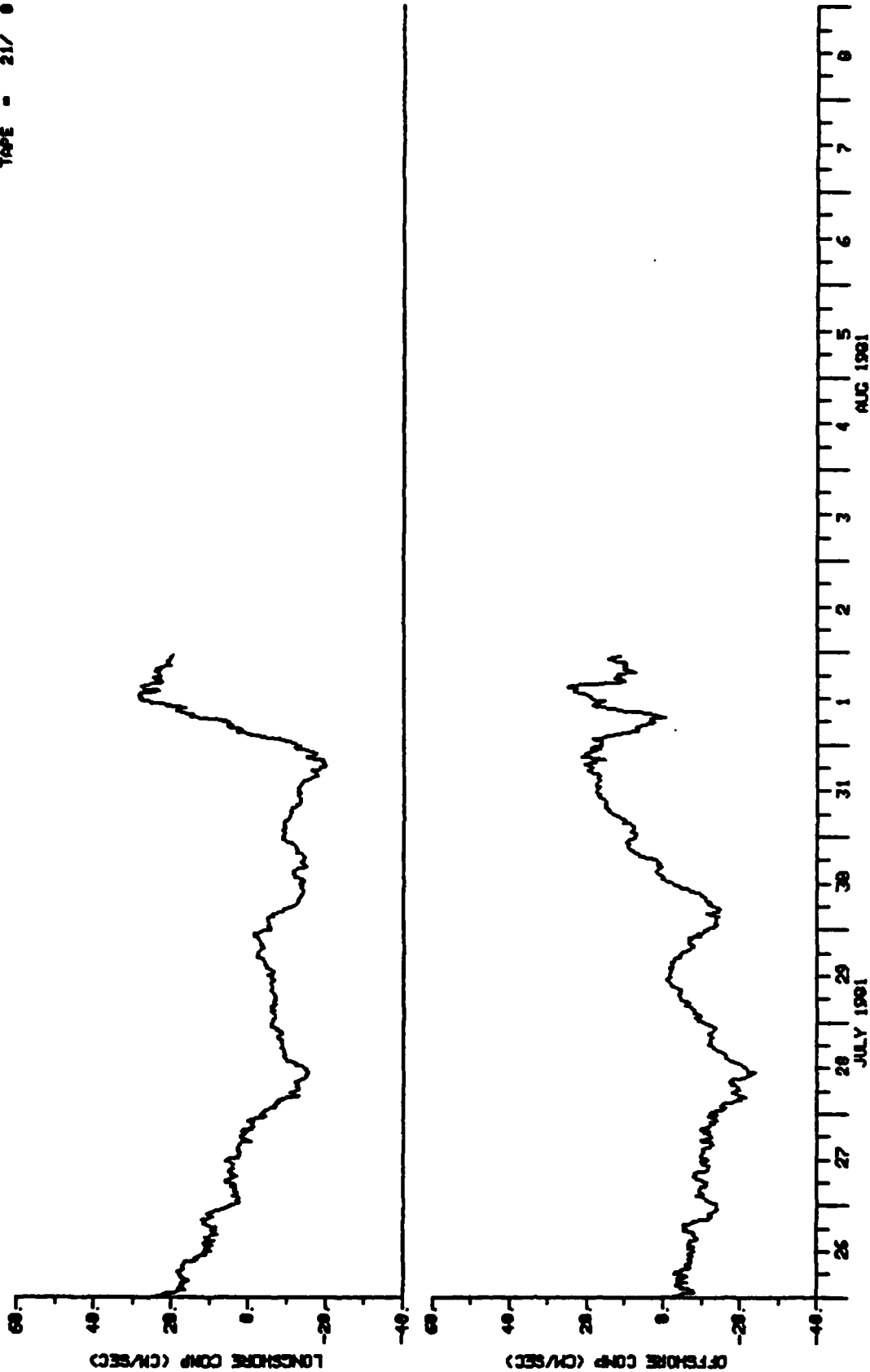
USCG BEAUFORT SEA STUDY

PAGE - 0
STN13 - CO-2
DEPTH - 48
TAPE - 21/ 0



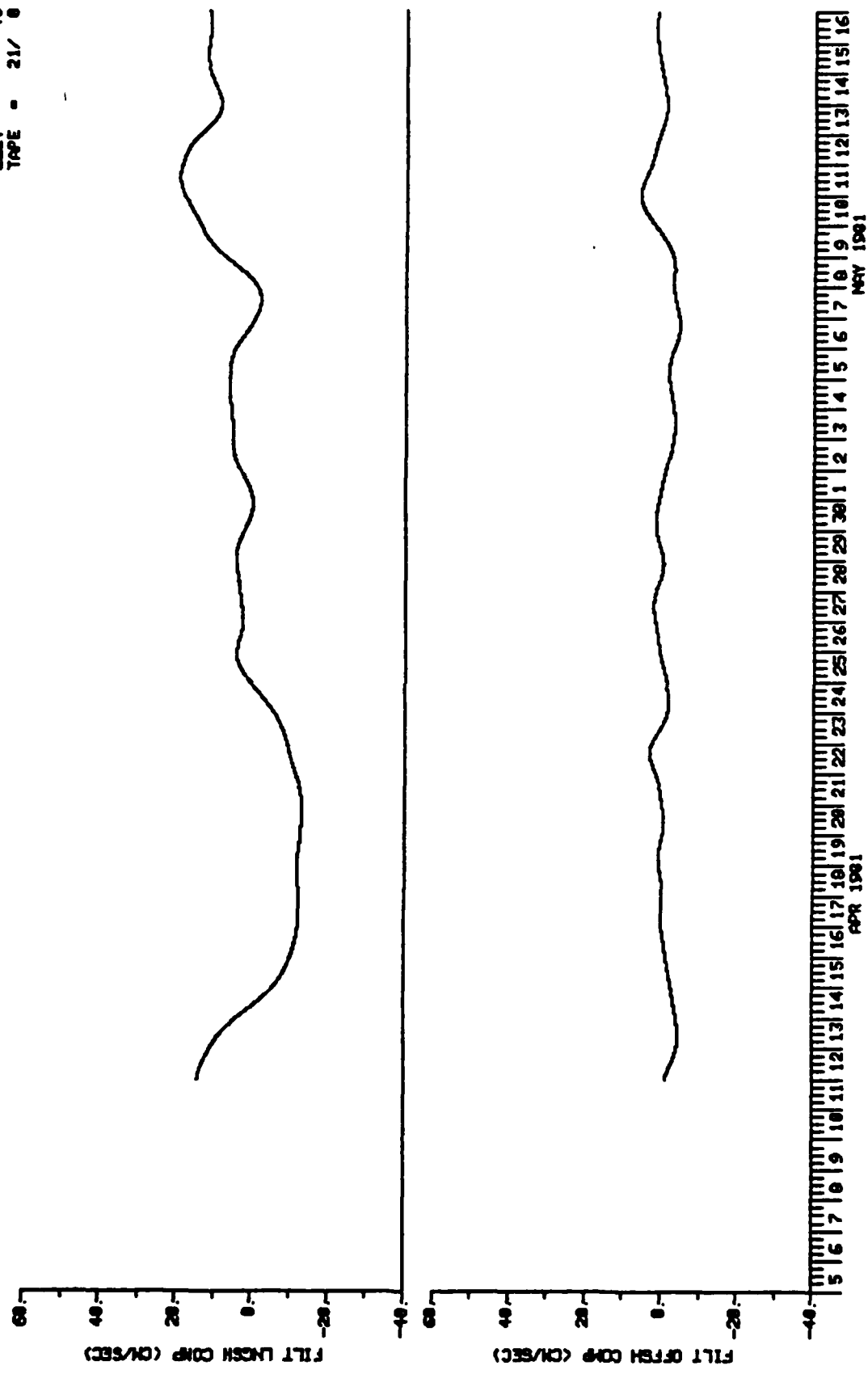
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - CD-2
DEPTH - 40
TAPE - 21/ 0



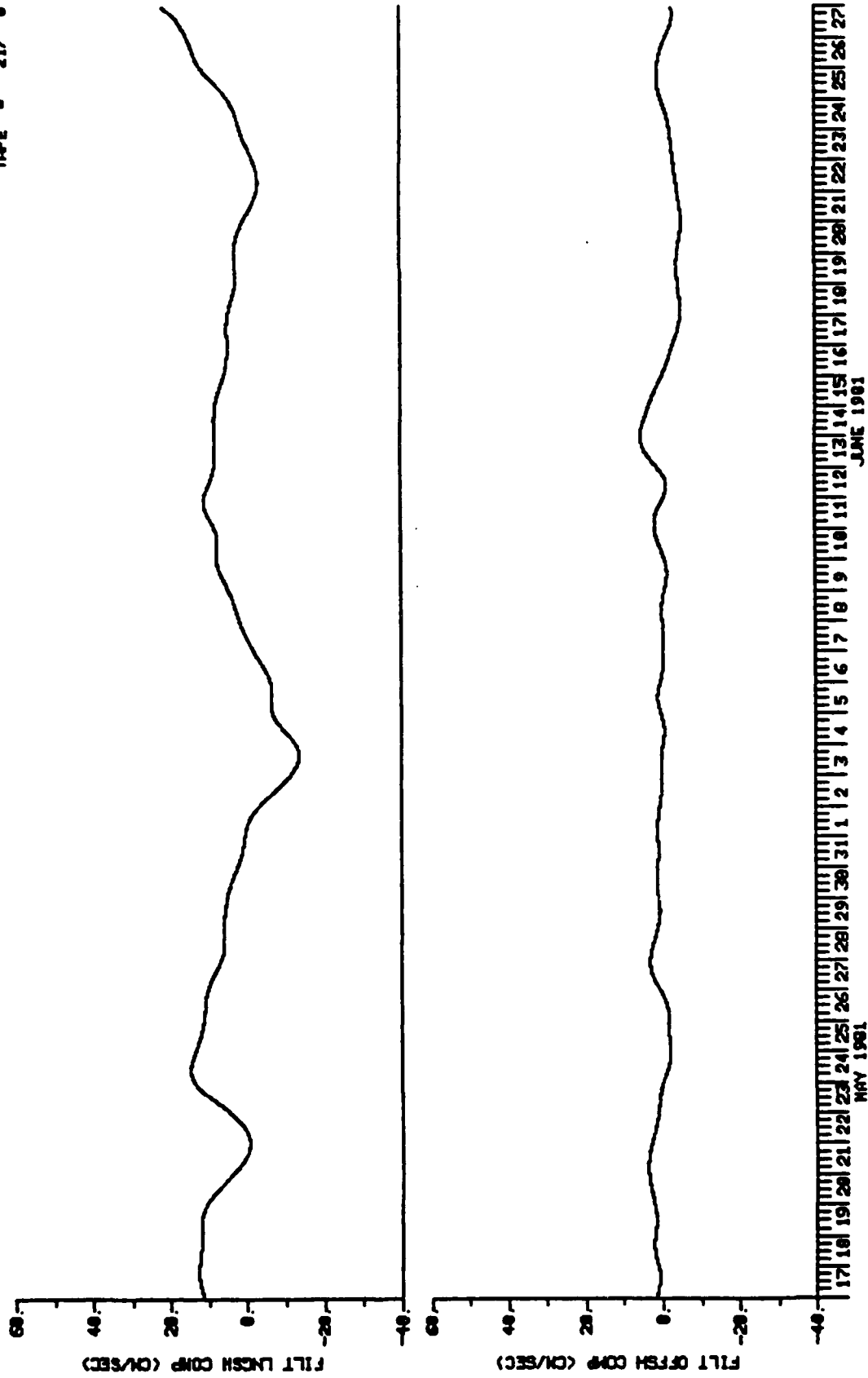
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CO-2
 ELEV - 40
 TAPE - 21/ 8



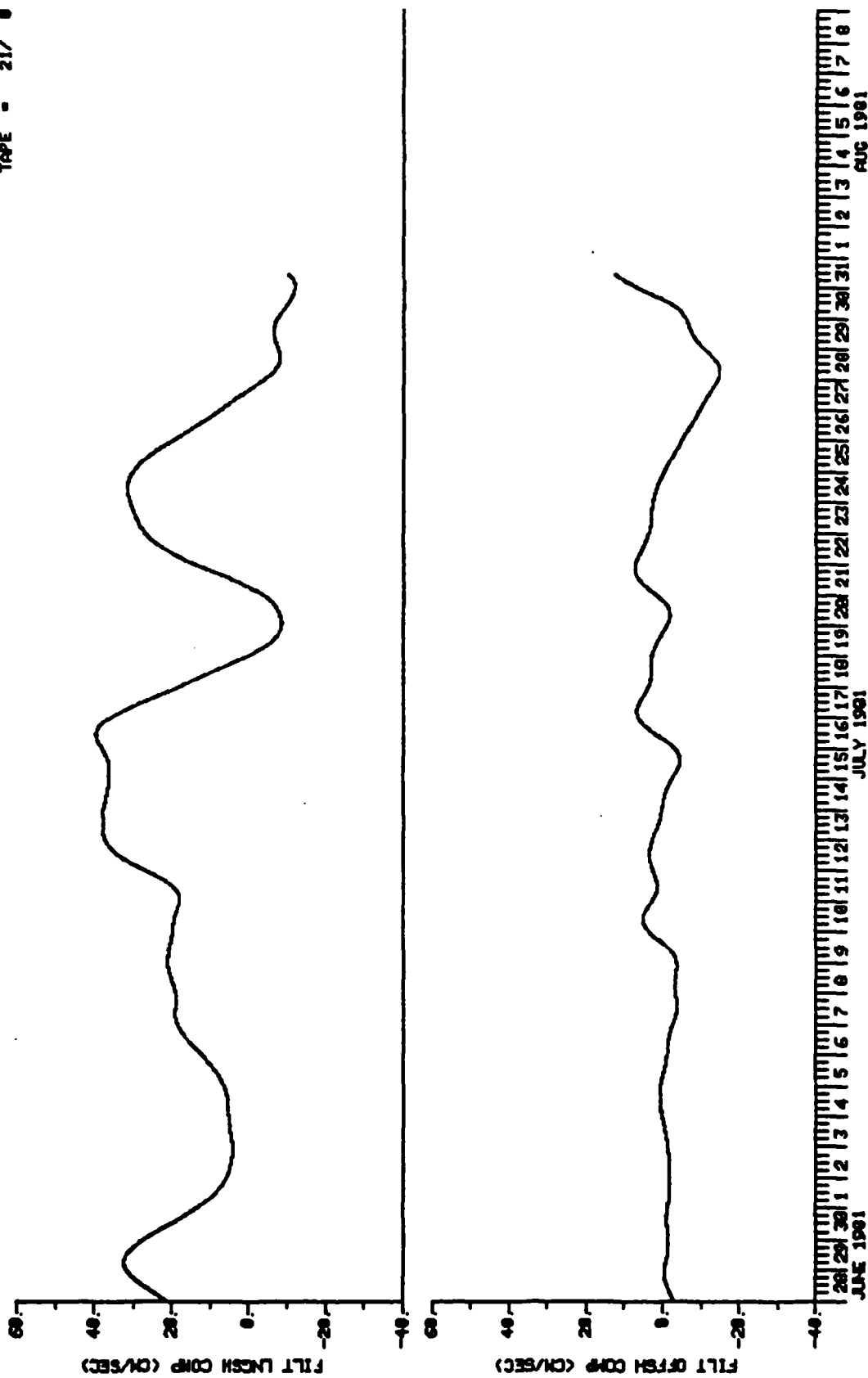
USCG BEAUFORT SEA STUDY

PAGE = 2
 STNID = 00-2
 ELEV = 48
 TAPE = 21/ 0



USCG BEAUFORT SEA STUDY

PAGE - 3
 STN13 - CG-2
 ELEV - 40
 TAPE - 21/ 0



CG22

268 m depth

70° 56.4' N 146° 00.6' W

10 April 1981 to 3 June 1981

Longshore direction is 118° T

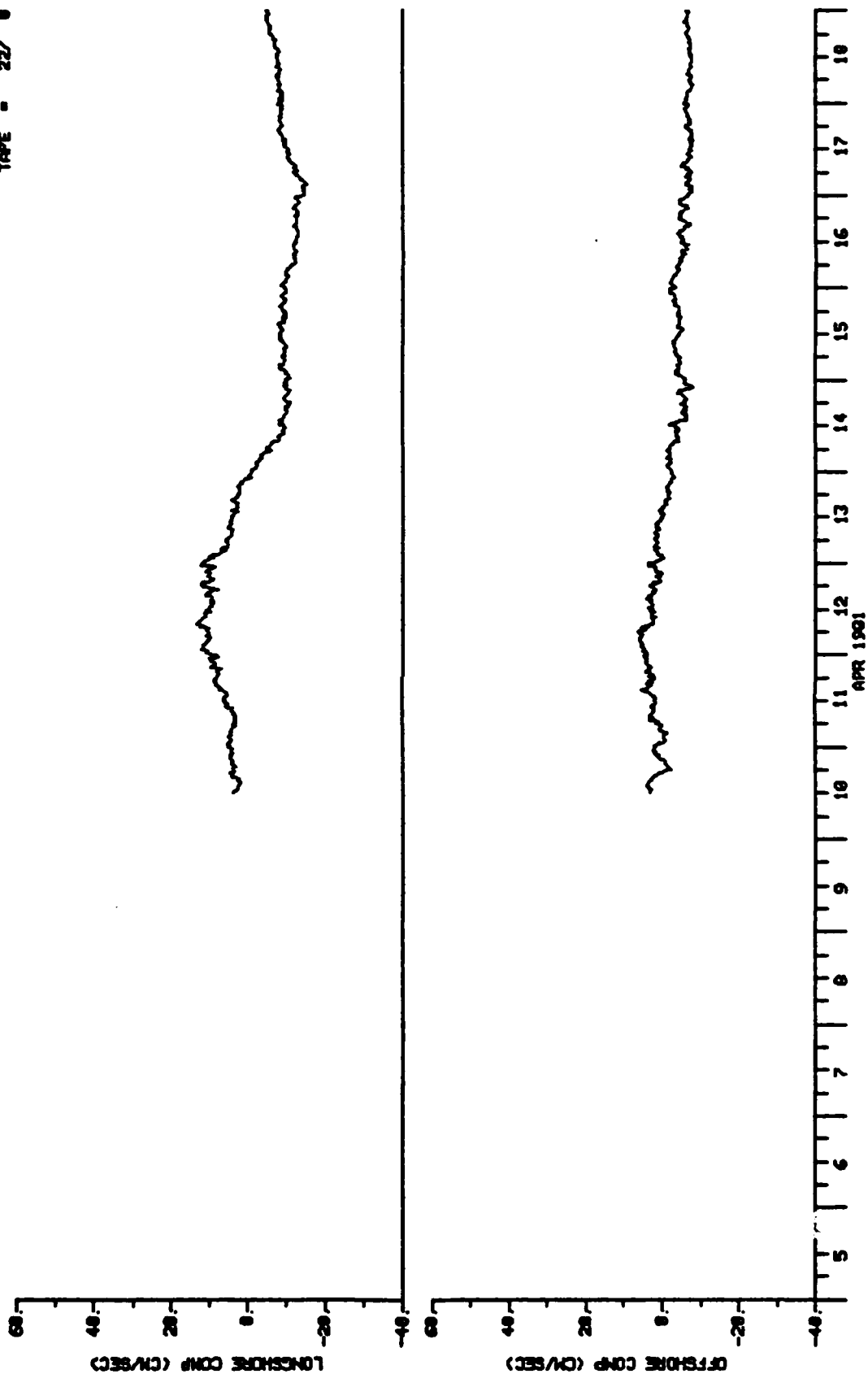
Offshore direction is 028° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

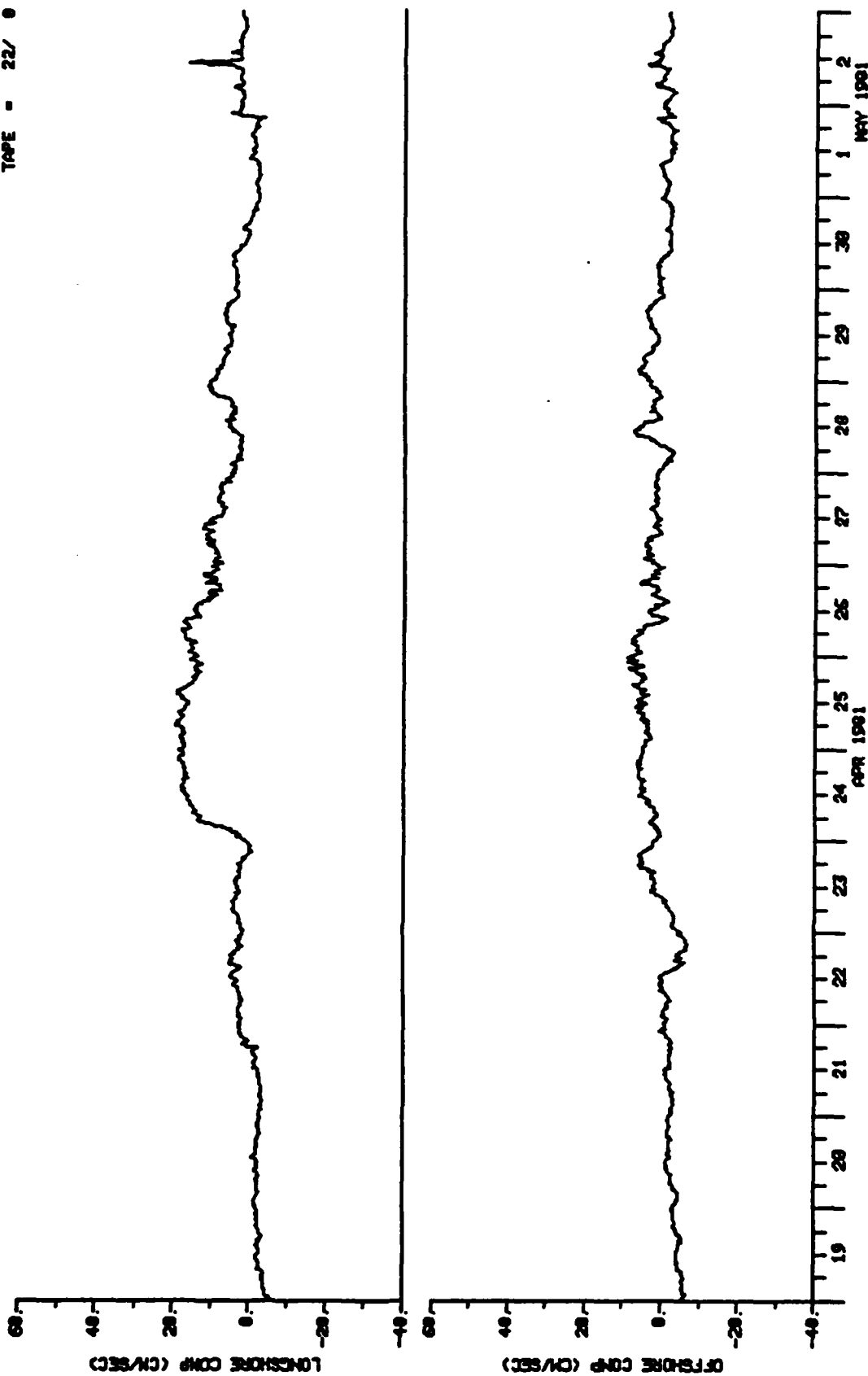
USCG BEAUFORT SEA STUDY

PAGE - 1
STNID - CO-2
DEPTH - 258
TAPE - 22/ 8



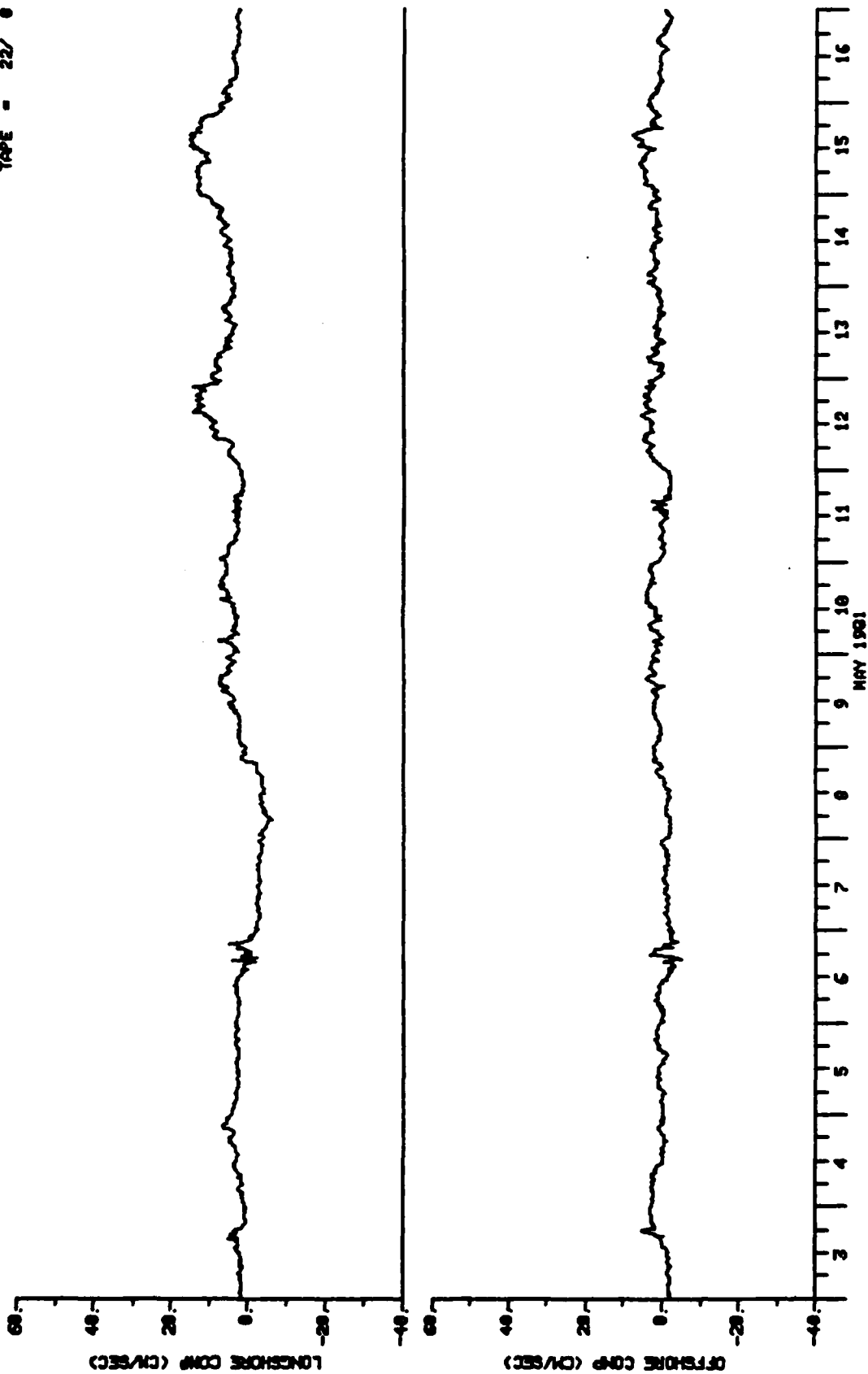
USCG BEAUFORT SEA STUDY

PAGE - 2
STATION - CO-2
DEPTH - 250
TAPE - 22/0



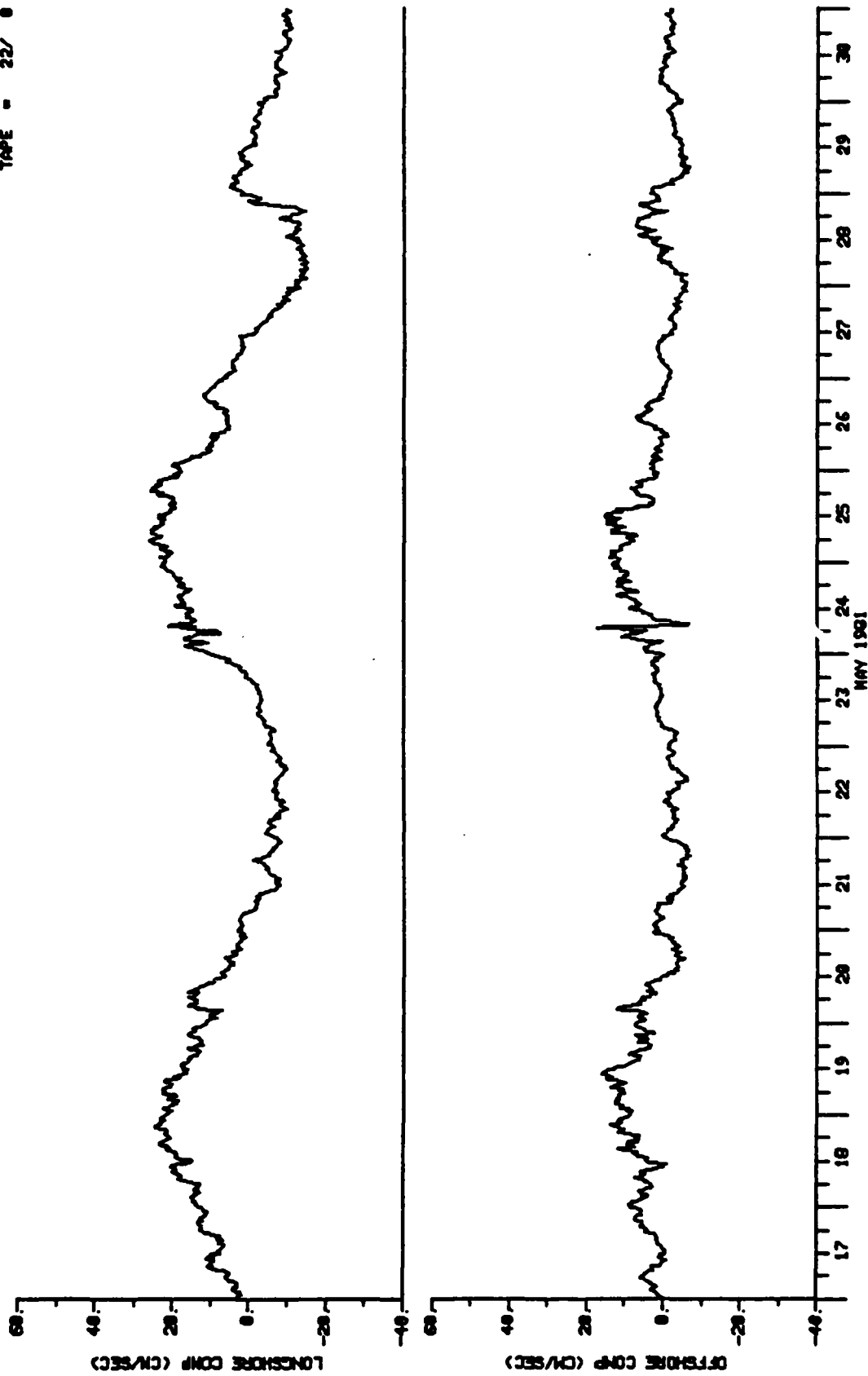
USCG BEAUFORT SEA STUDY

PAGE - 3
STATION - CO-2
DEPTH - 268
TAPE - 22/ 6



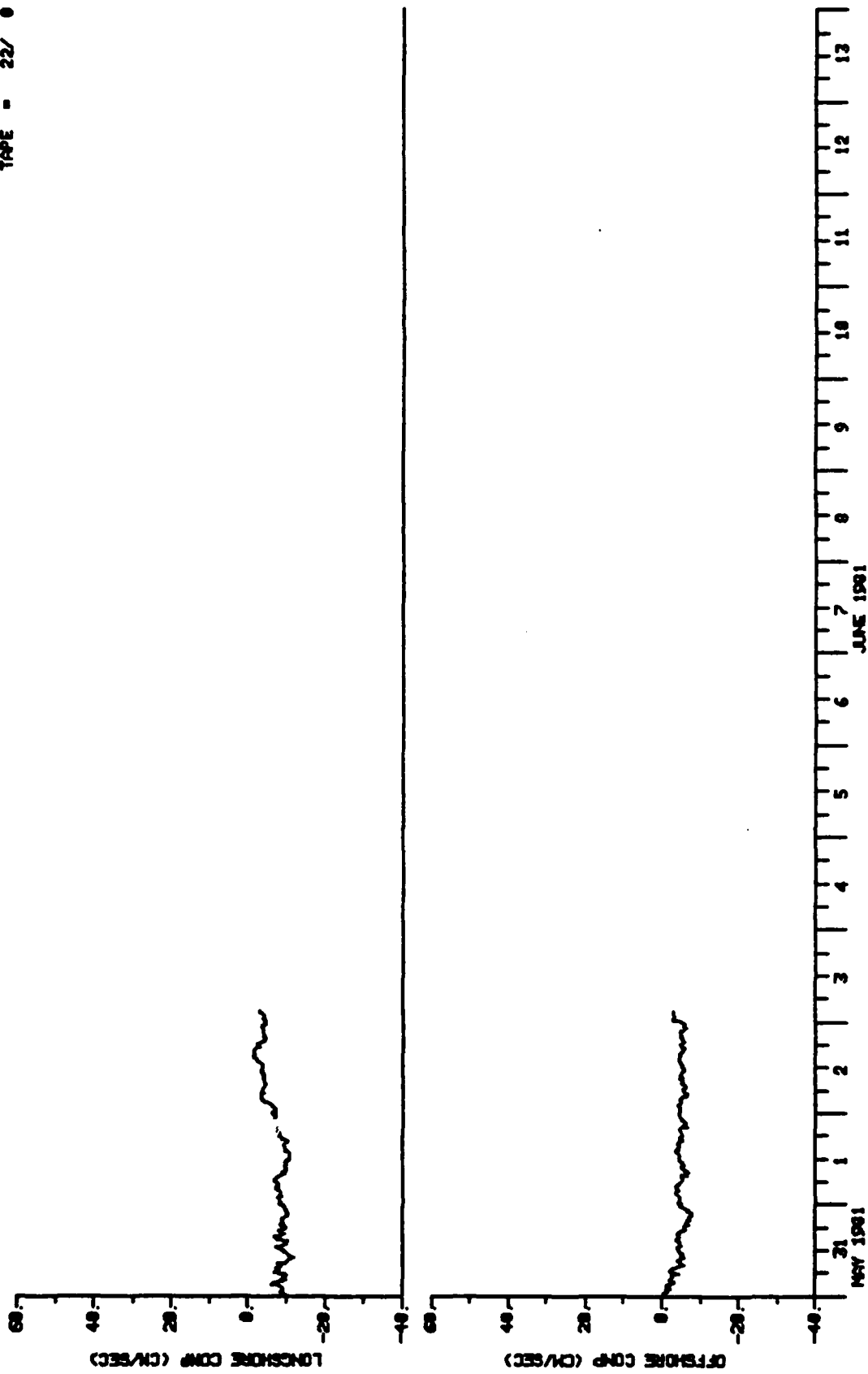
USCG BEAUFORT SEA STUDY

PAGE - 4
STATION - CO-2
DEPTH - 268
TAPE - 22/ 8



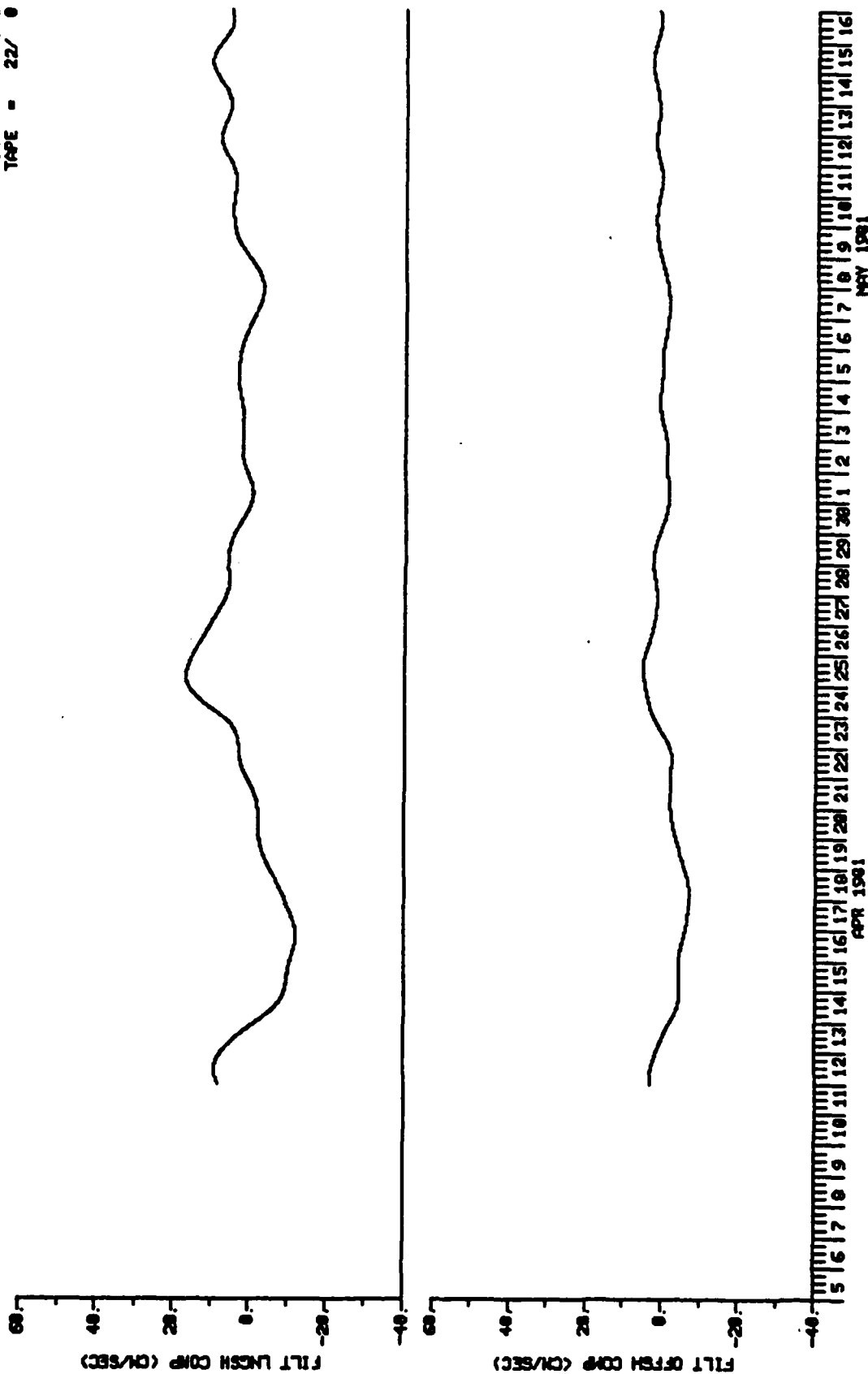
USCG BEAUFORT SEA STUDY

PAGE - 5
 STNID - CO-2
 DEPTH - 260
 TAPE - 22/ 0



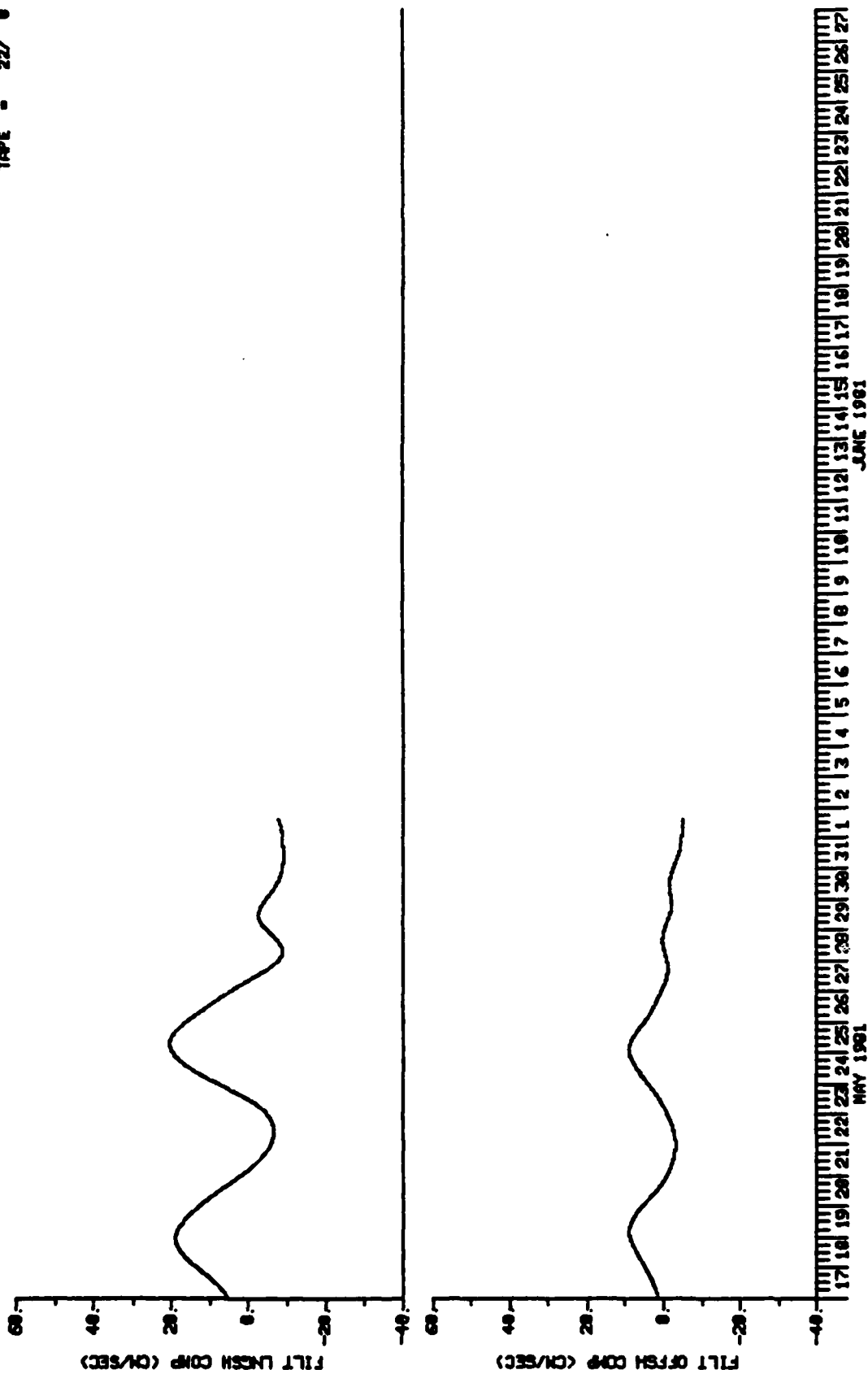
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CG-2
 ELEV - 250
 TAPE - 22/ 0



USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - CO-2
 ELEV - 258
 TAPE - 22/ 0



CG31

40 m depth
70° 56.4' N 146° 00.6' W
11 April 1981 to 2 August 1981

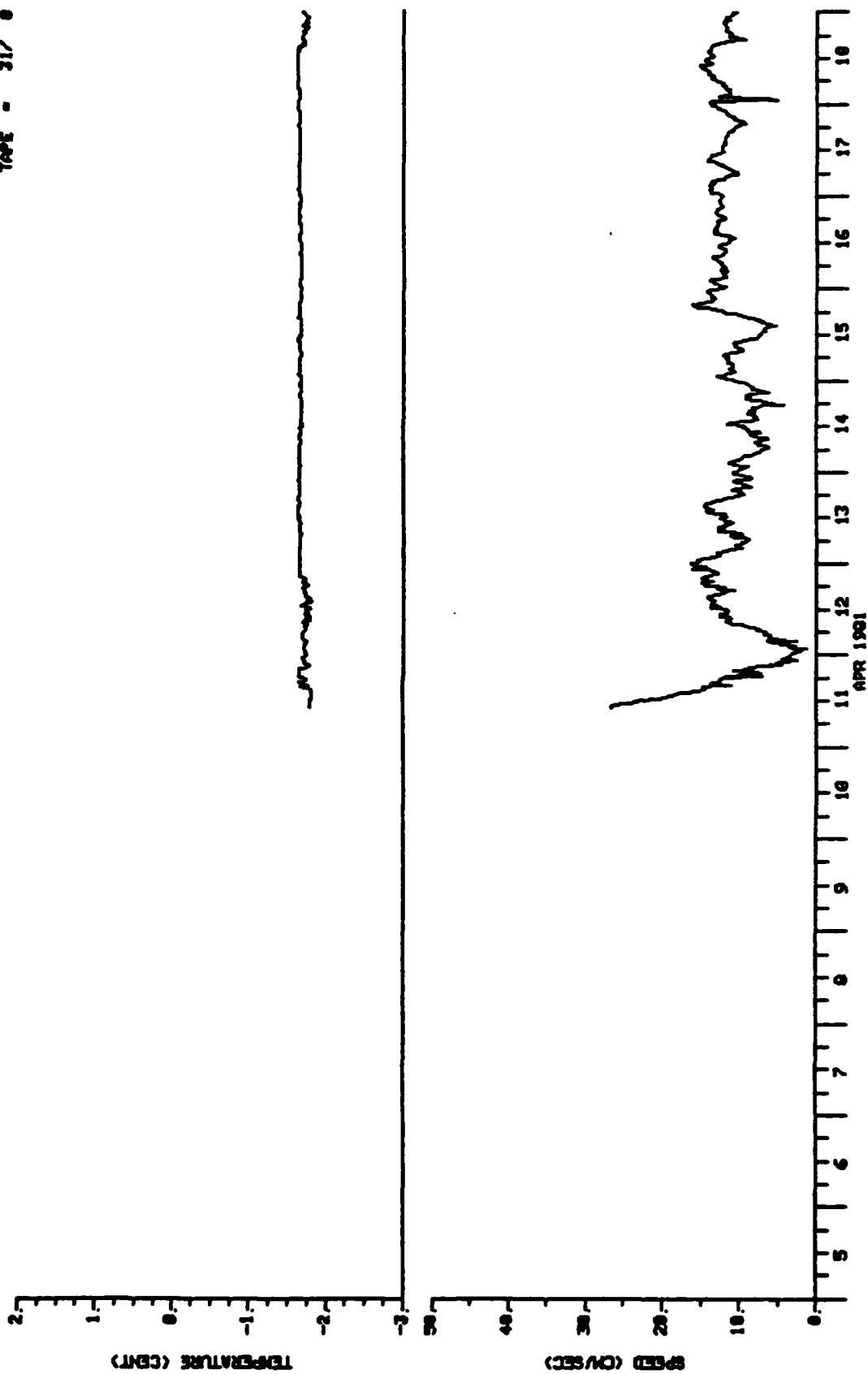
Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

Note: Temperature and speed are
plotted due to compass
failure on this instrument.

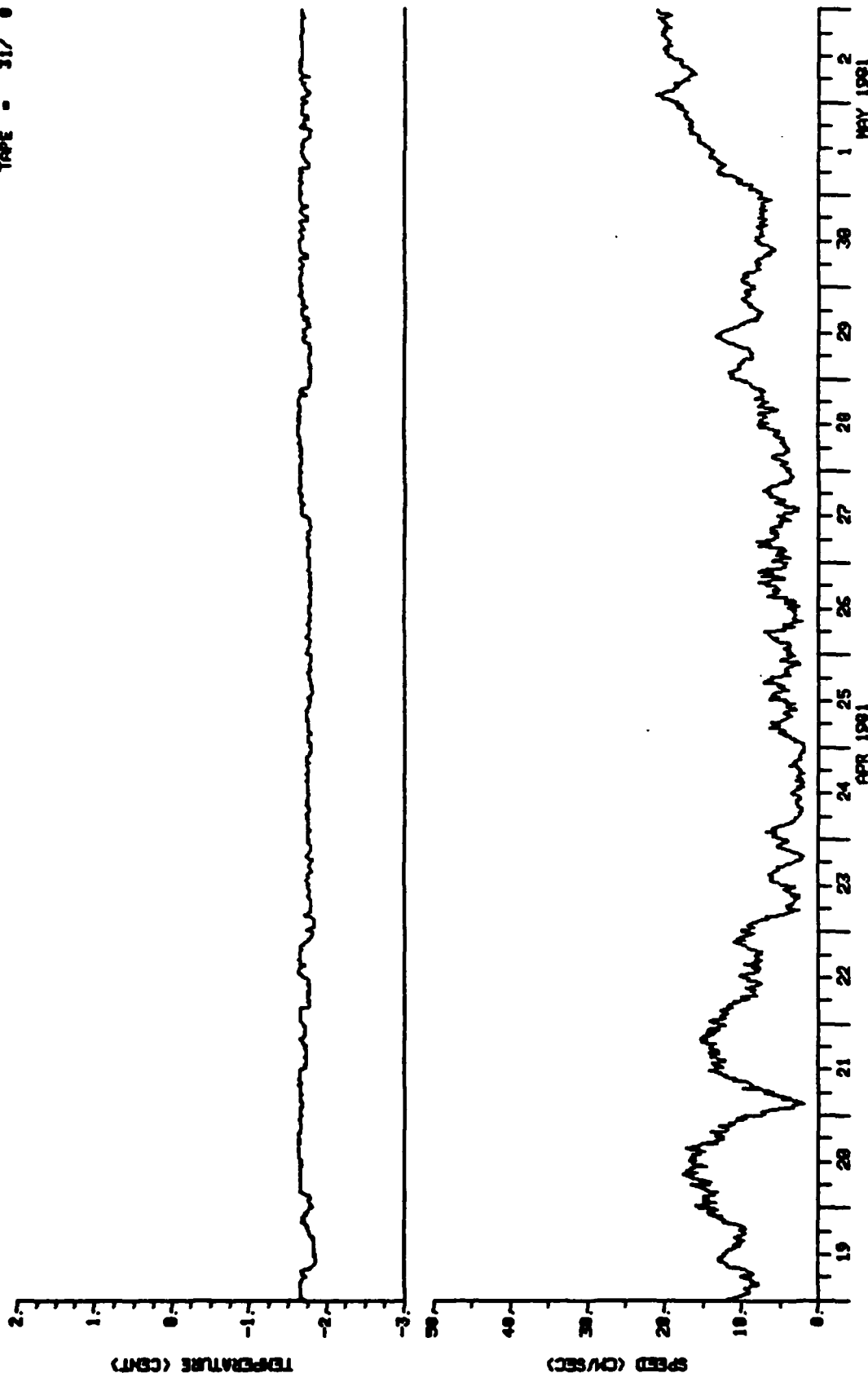
USCG BEAUFORT SEA STUDY

PAGE - 1
STN13 - CO-3
DEPTH - 48
TAPE - 31/ 8



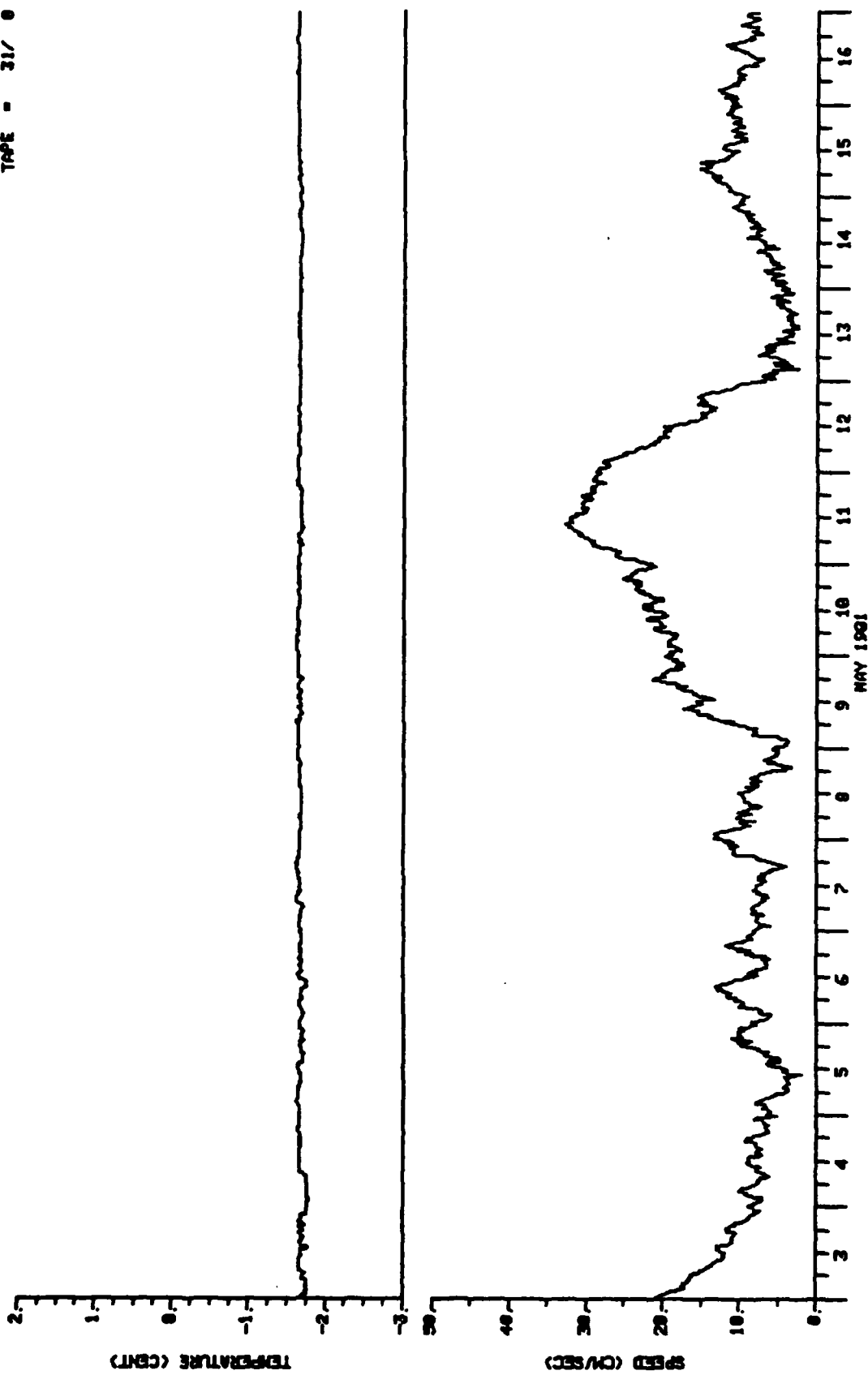
USCG BEAUFORT SEA STUDY

PAGE = 2
STATION = CO-3
DEPTH = 40
TAPE = 31/ 0



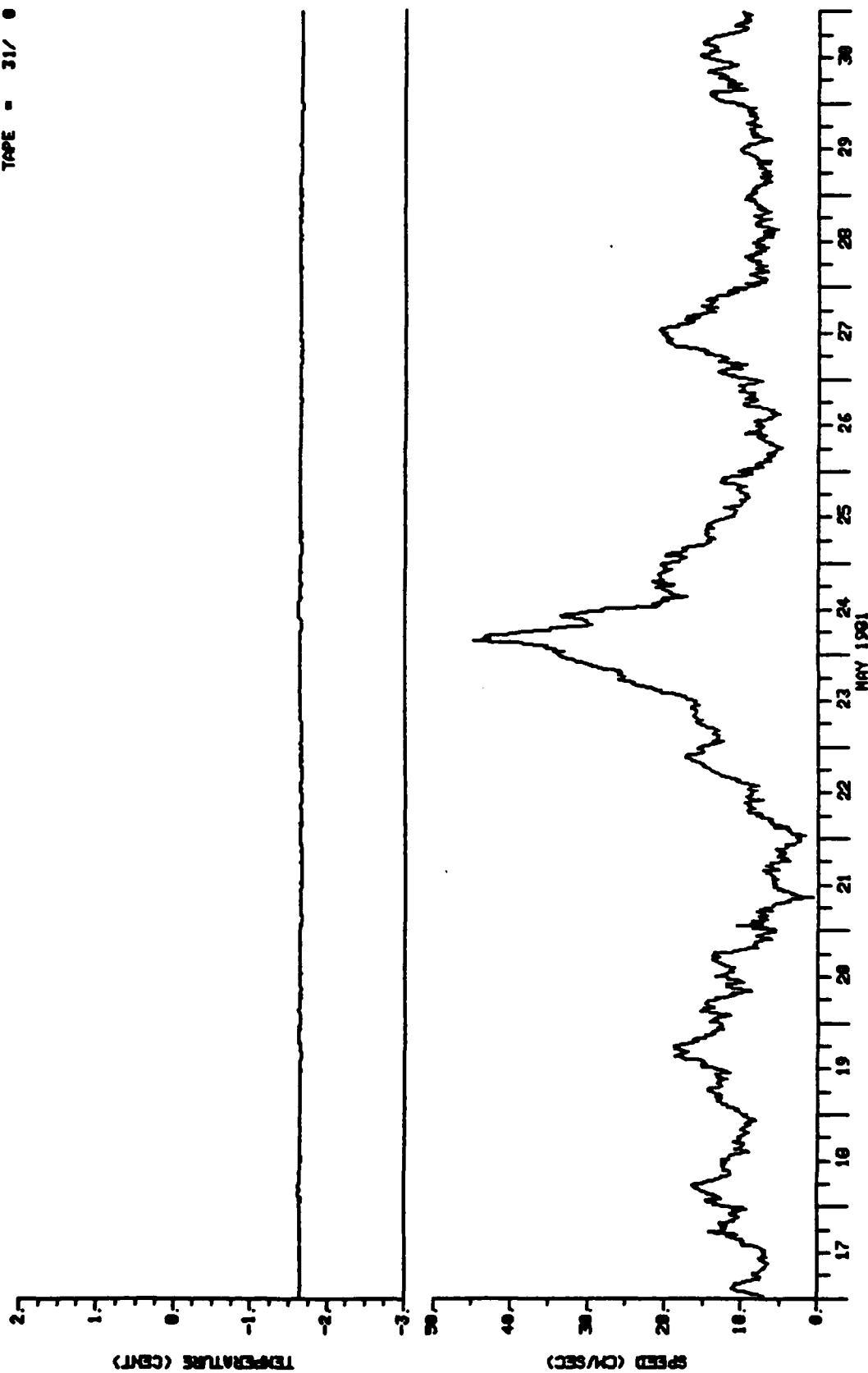
USCG BEAUFORT SEA STUDY

PAGE - 3
 STATION - CO-3
 DEPTH - 48
 TAPE - 31/ 8



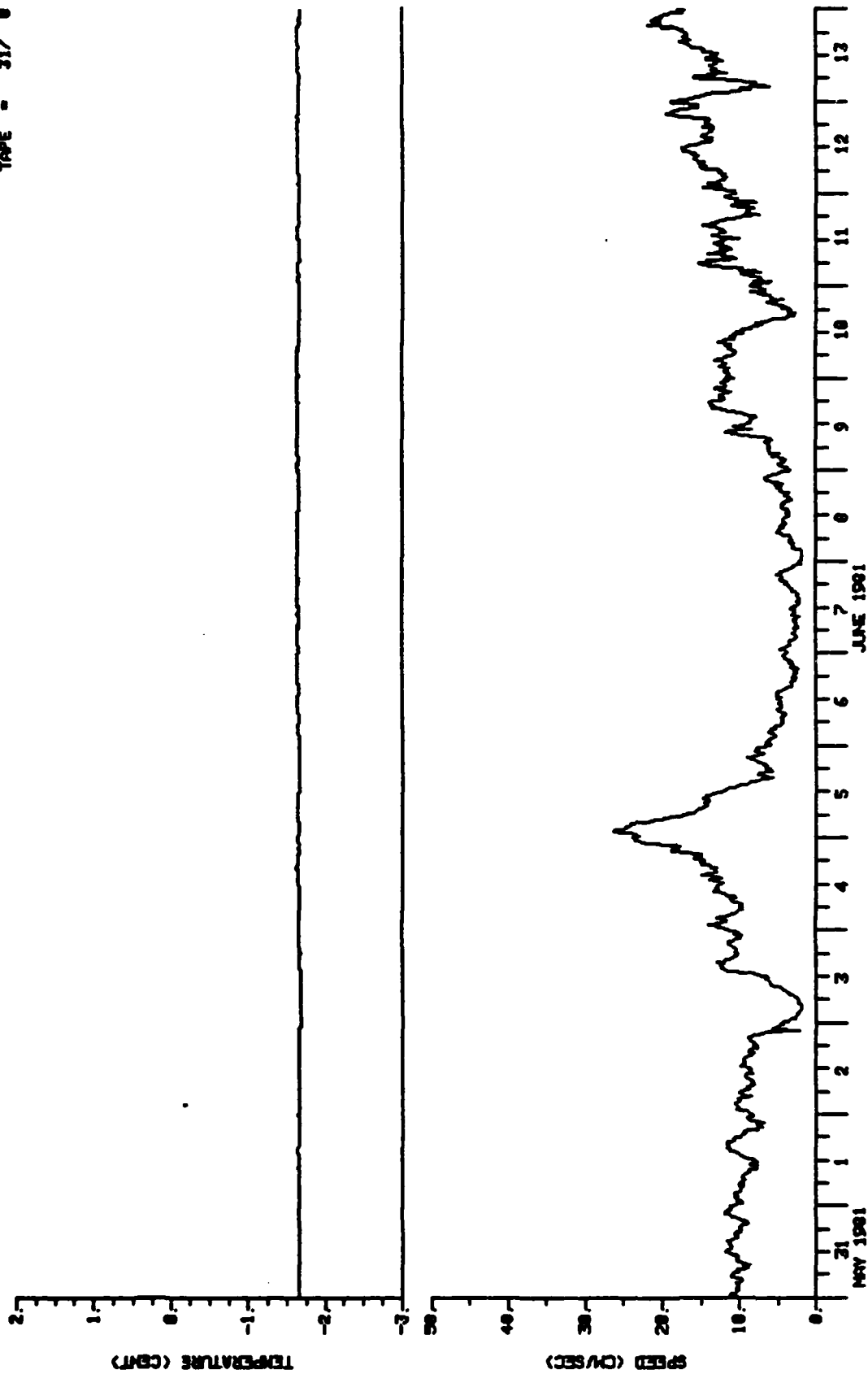
USCG BEAUFORT SEA STUDY

PAGE = 4
STN13 = CG-3
DEPTH = 48
TAPE = 31/ 8



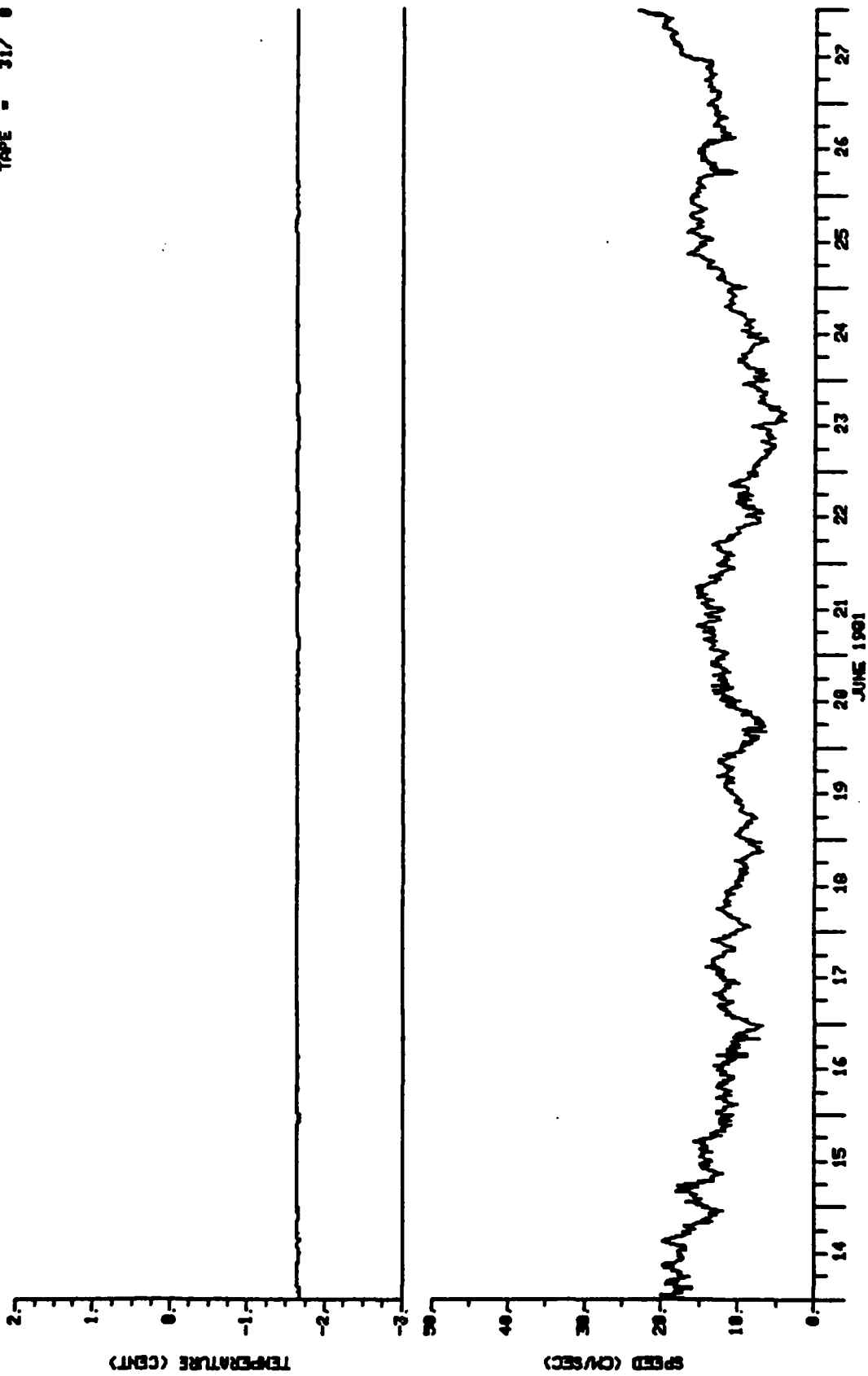
USCG BEAUFORT SEA STUDY

PAGE = 5
STN13 = CO-3
DEPTH = 40
TAPE = 31/ 0



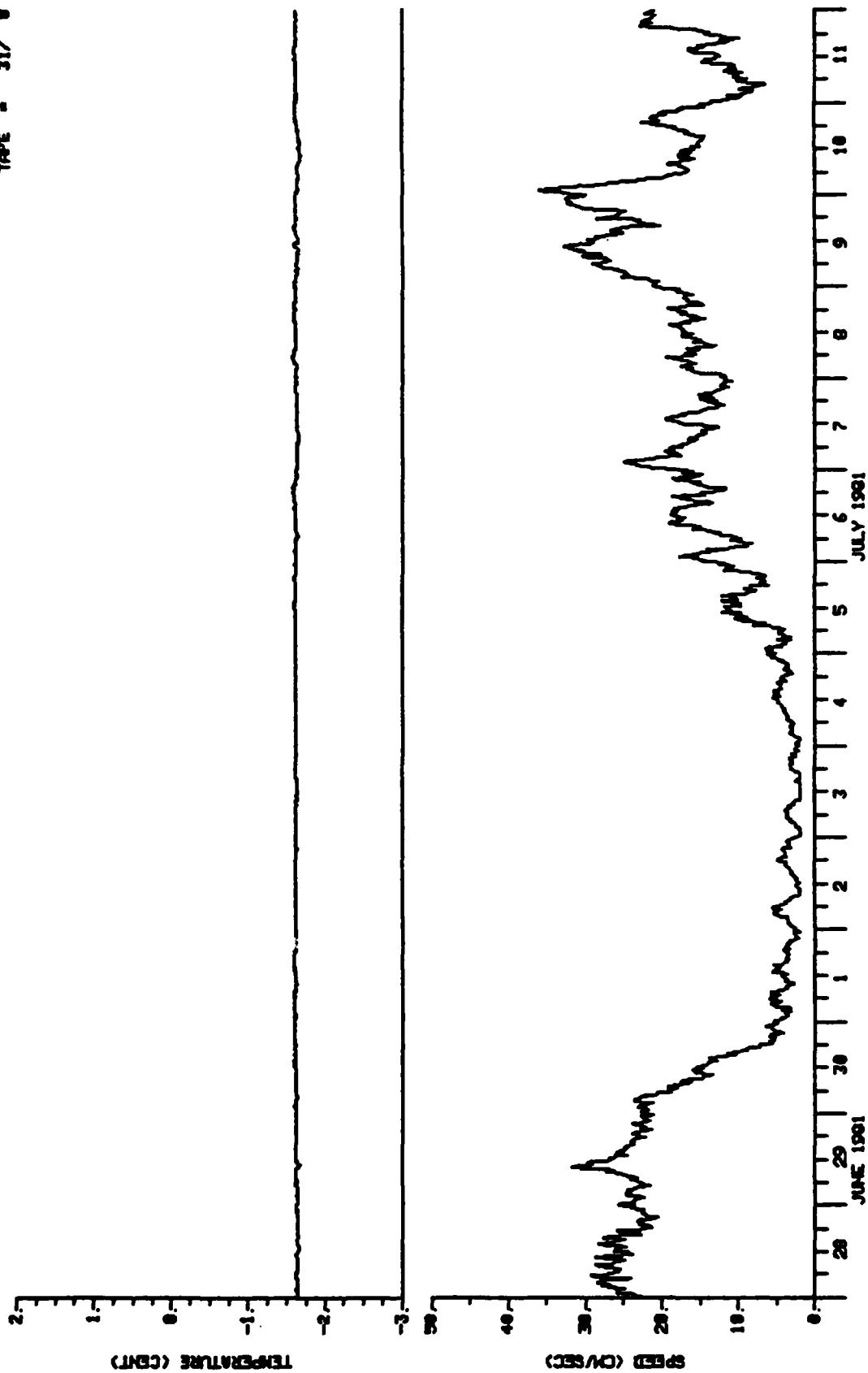
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - CG-3
DEPTH - 40
TAPE - 31/ 0



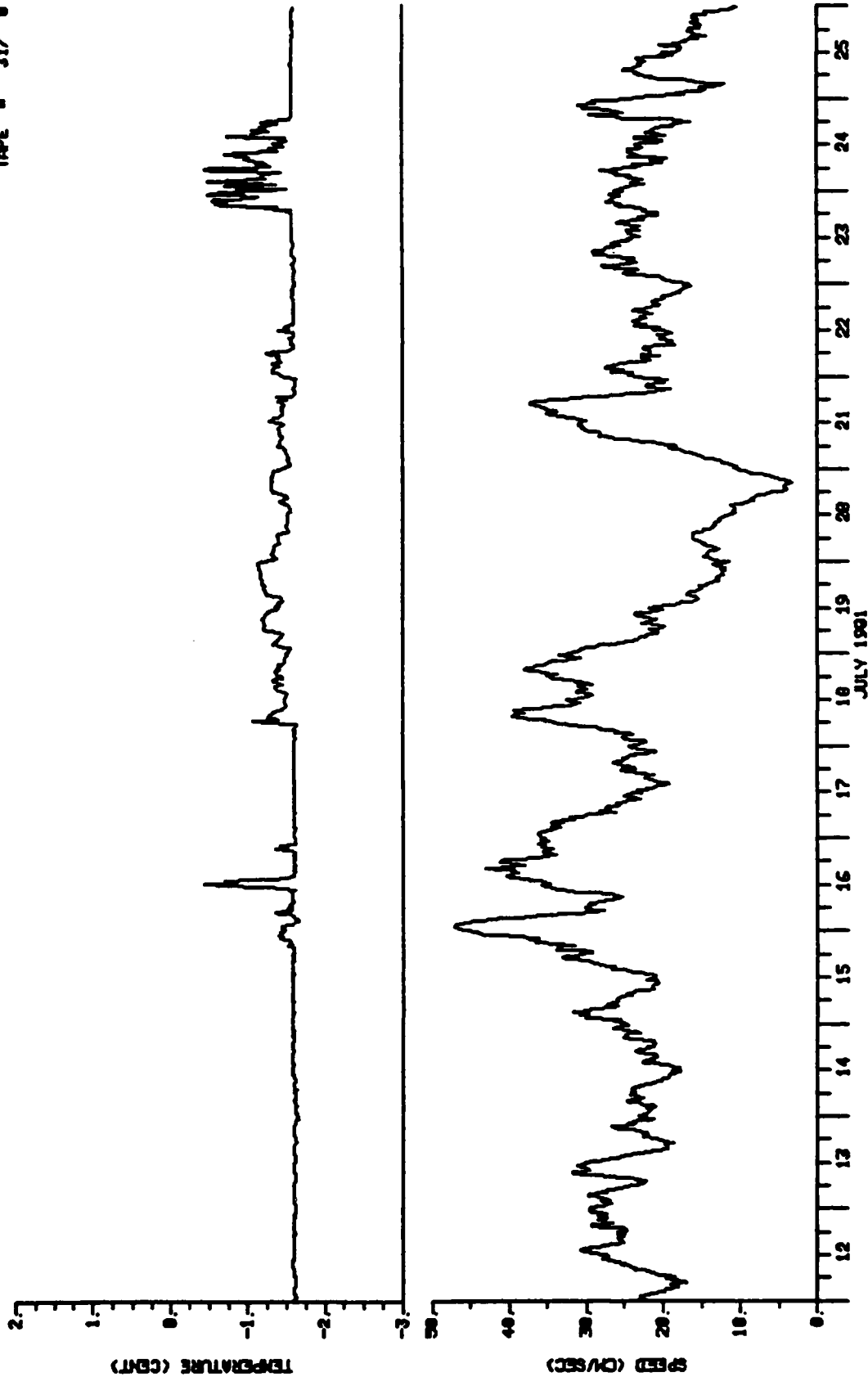
USCG BEAUFORT SEA STUDY

PAGE - 7
STATION - CO-3
DEPTH - 48
TAPE - 31/ 8



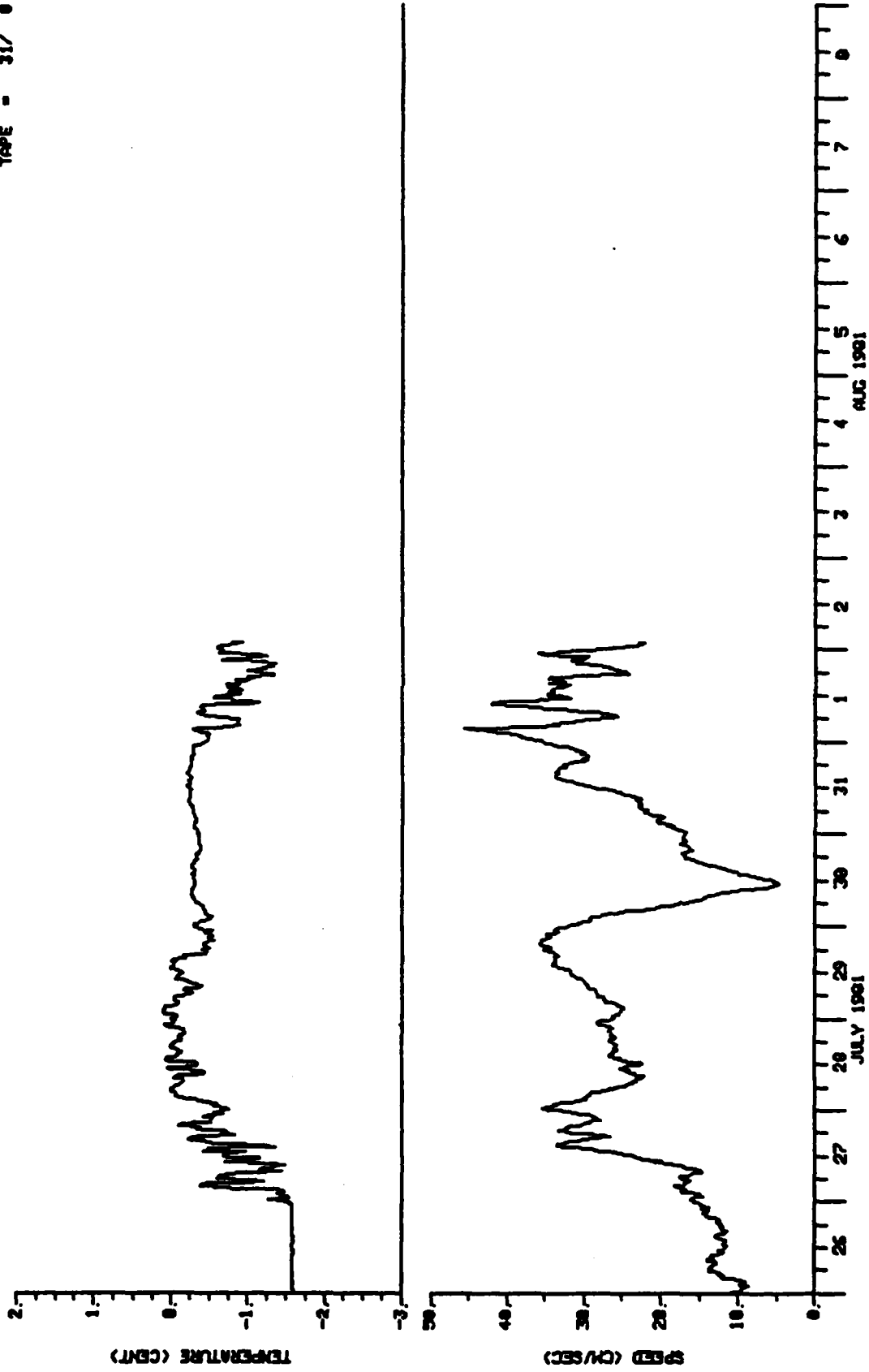
USCG BEAUFORT SEA STUDY

PAGE - 8
STN13 - 00-3
DEPTH - 48
TAPE - 31/ 8



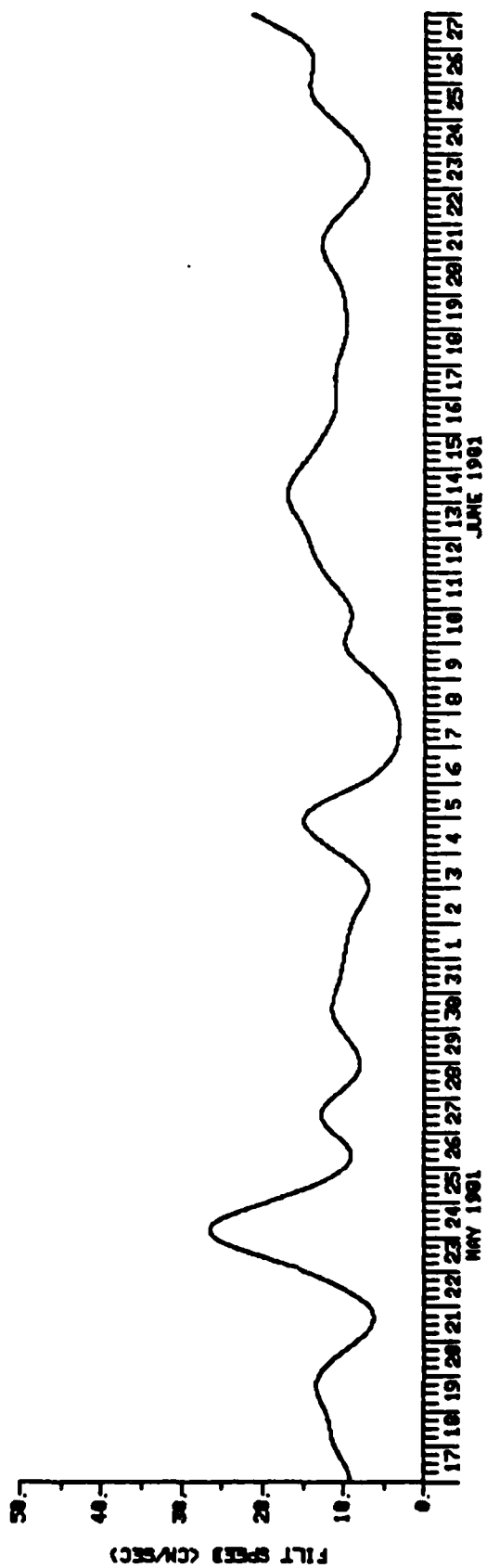
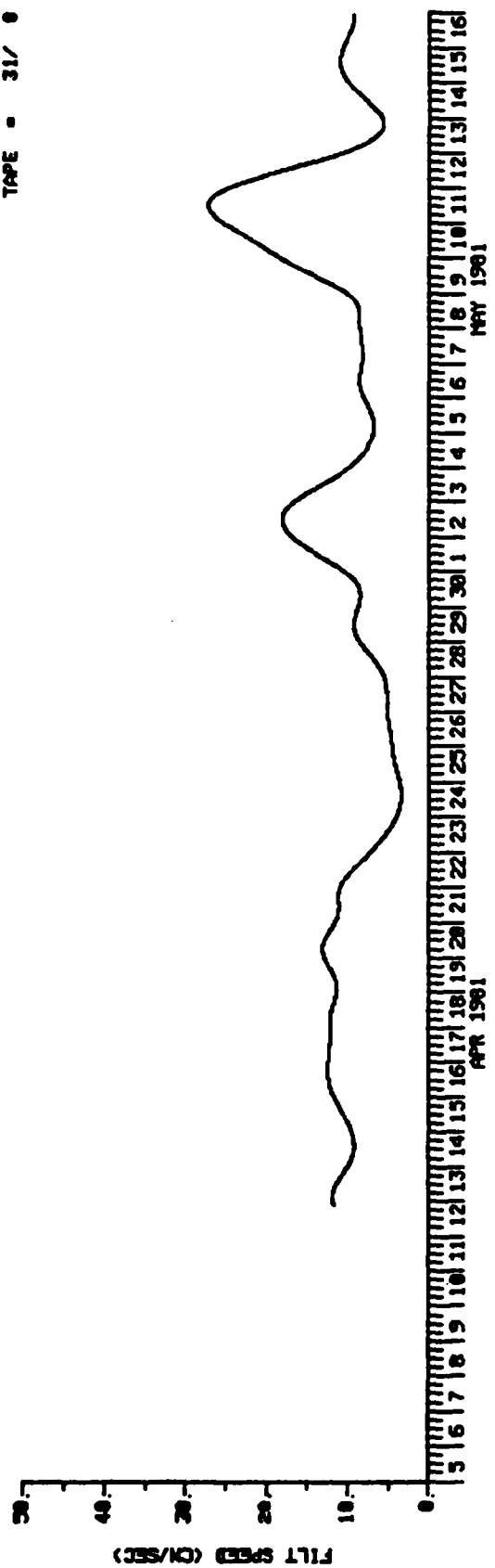
USCG BEAUFORT SEA STUDY

PAGE - 9
 STATION - CO-3
 DEPTH - 40
 TAPE - 31/ 0



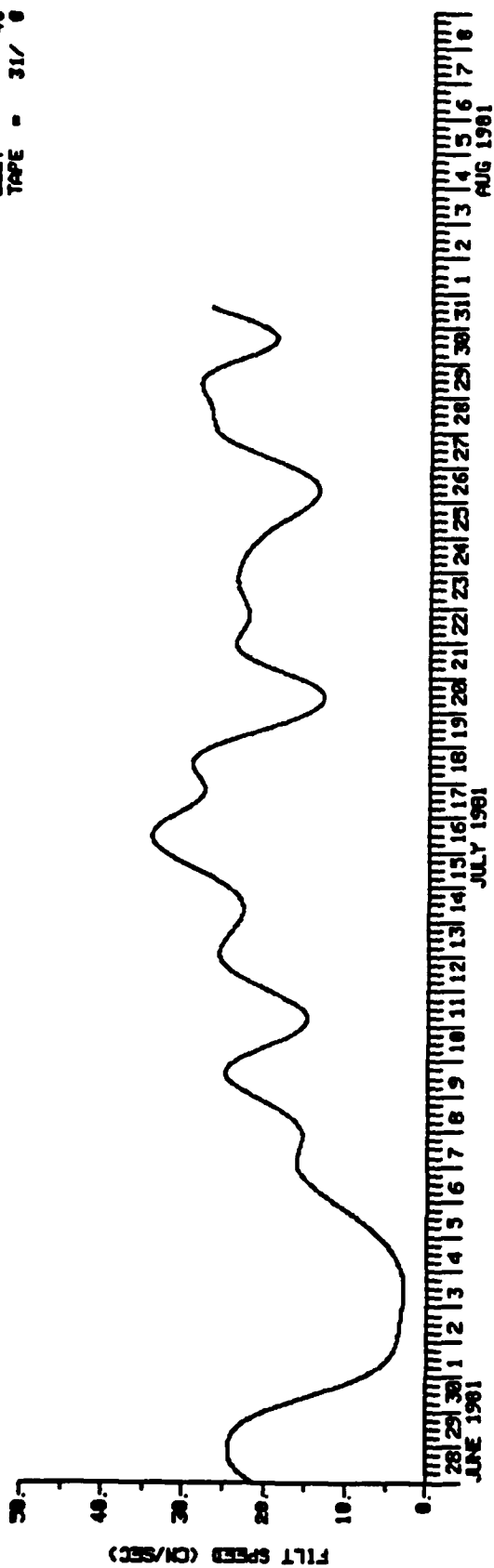
USCG BEAUFORT SEA STUDY

PAGE = 1
 STN13 = CG-3
 ELEV = 48
 TAPE = 31/ 8



USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - CO-3
 ELEV - 40
 TAPE - 31/ 0



CG32

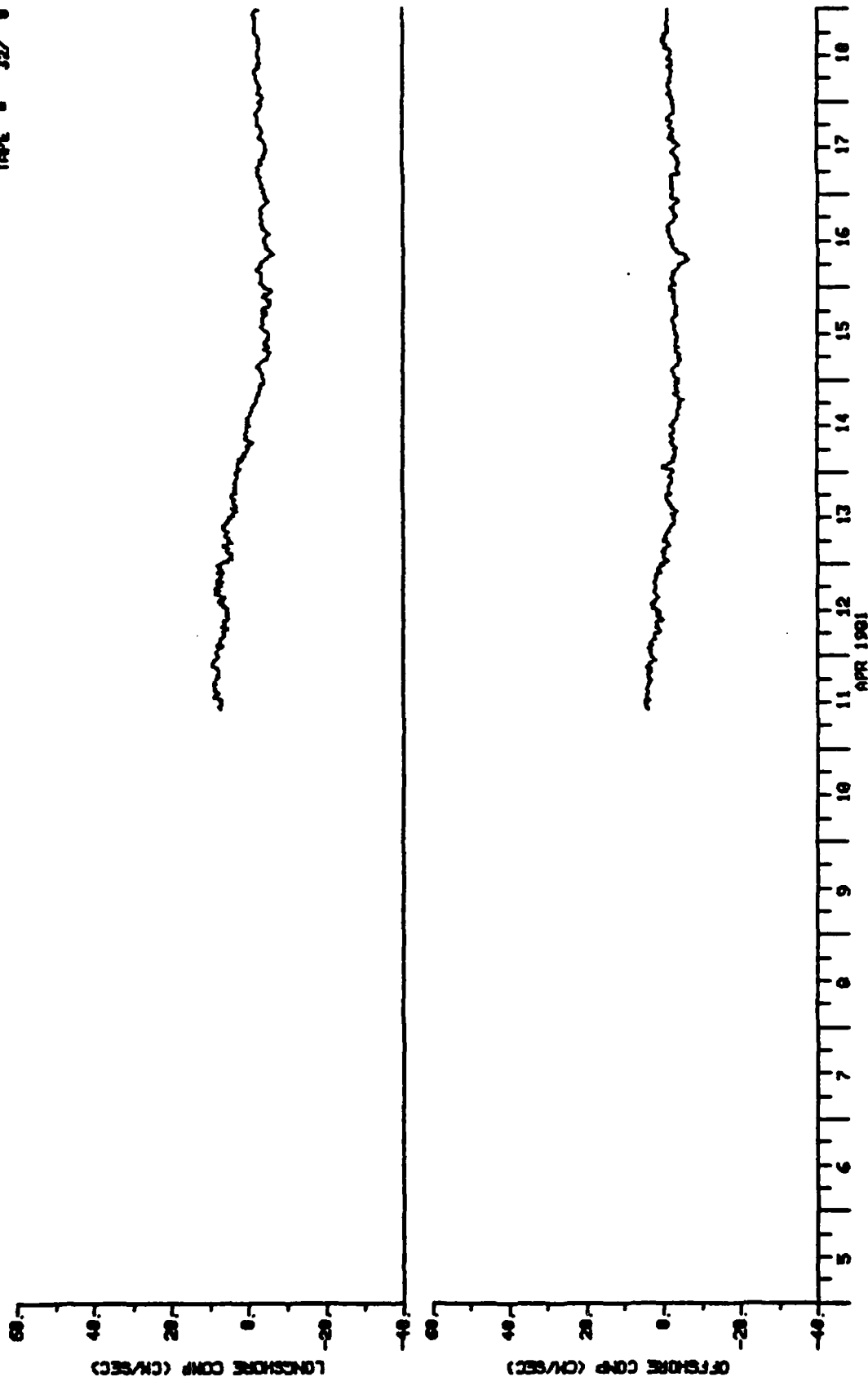
268 m depth
70° 57.8' N 146° 02.9' W
11 April 1981 to 2 August 1981
Longshore direction is 118° T
Offshore direction is 028° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

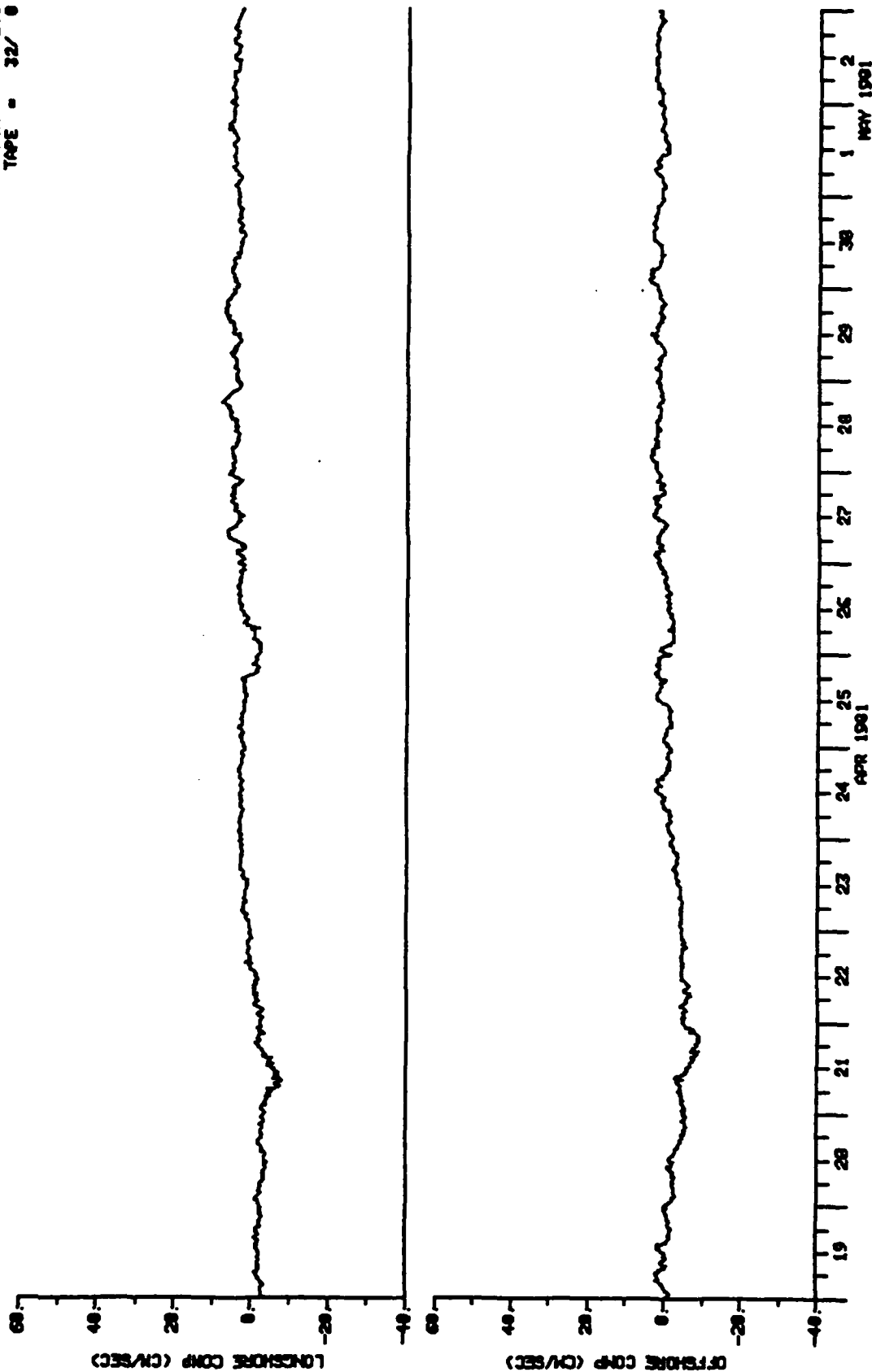
USCG BEAUFORT SEA STUDY

PAGE = 1
STATION = CO-3
DEPTH = 260
TAPE = 32/0



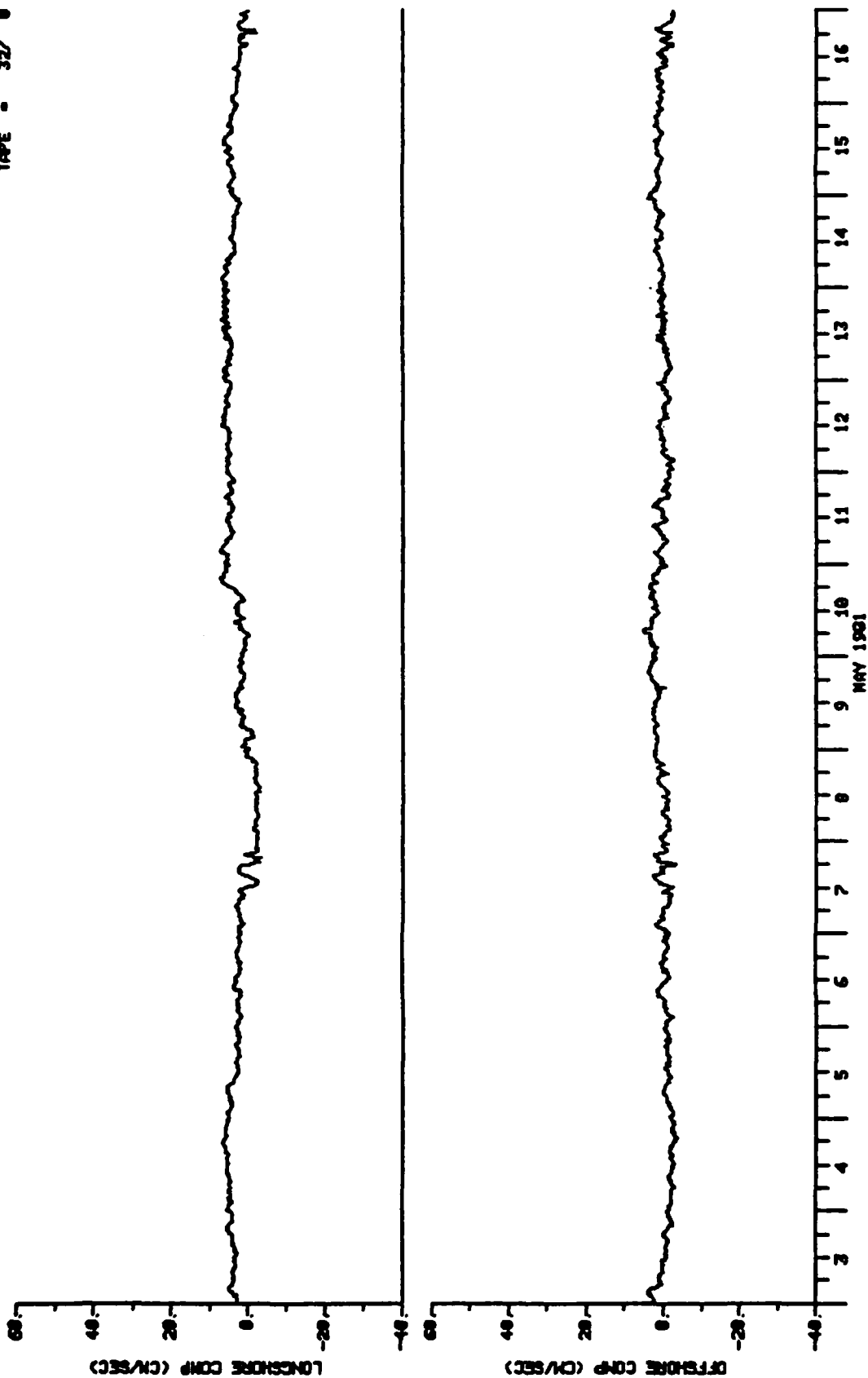
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CO-3
DEPTH - 268
TAPE - 32/ 0



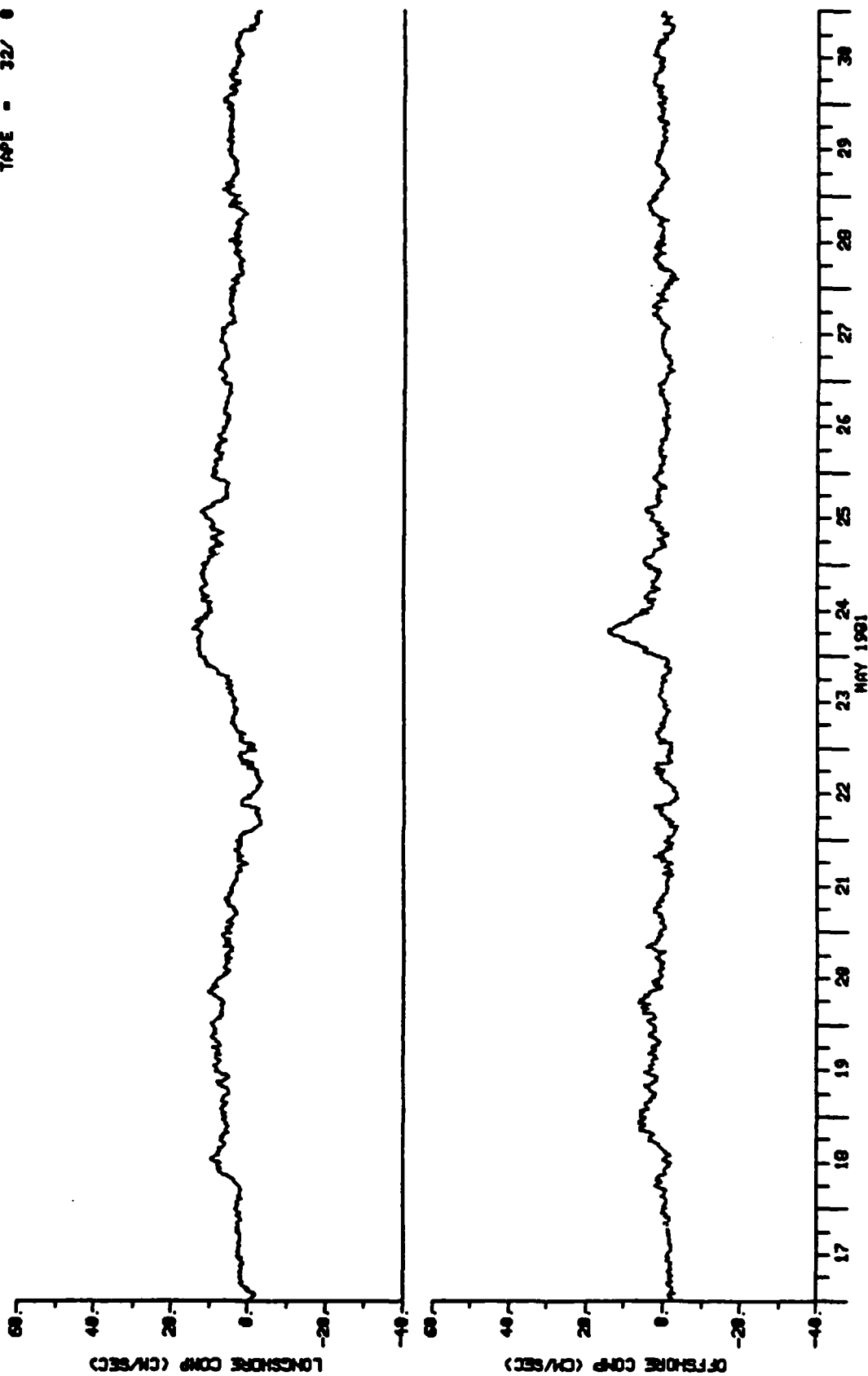
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - CO-3
DEPTH - 268
TAPE - 32/ 8



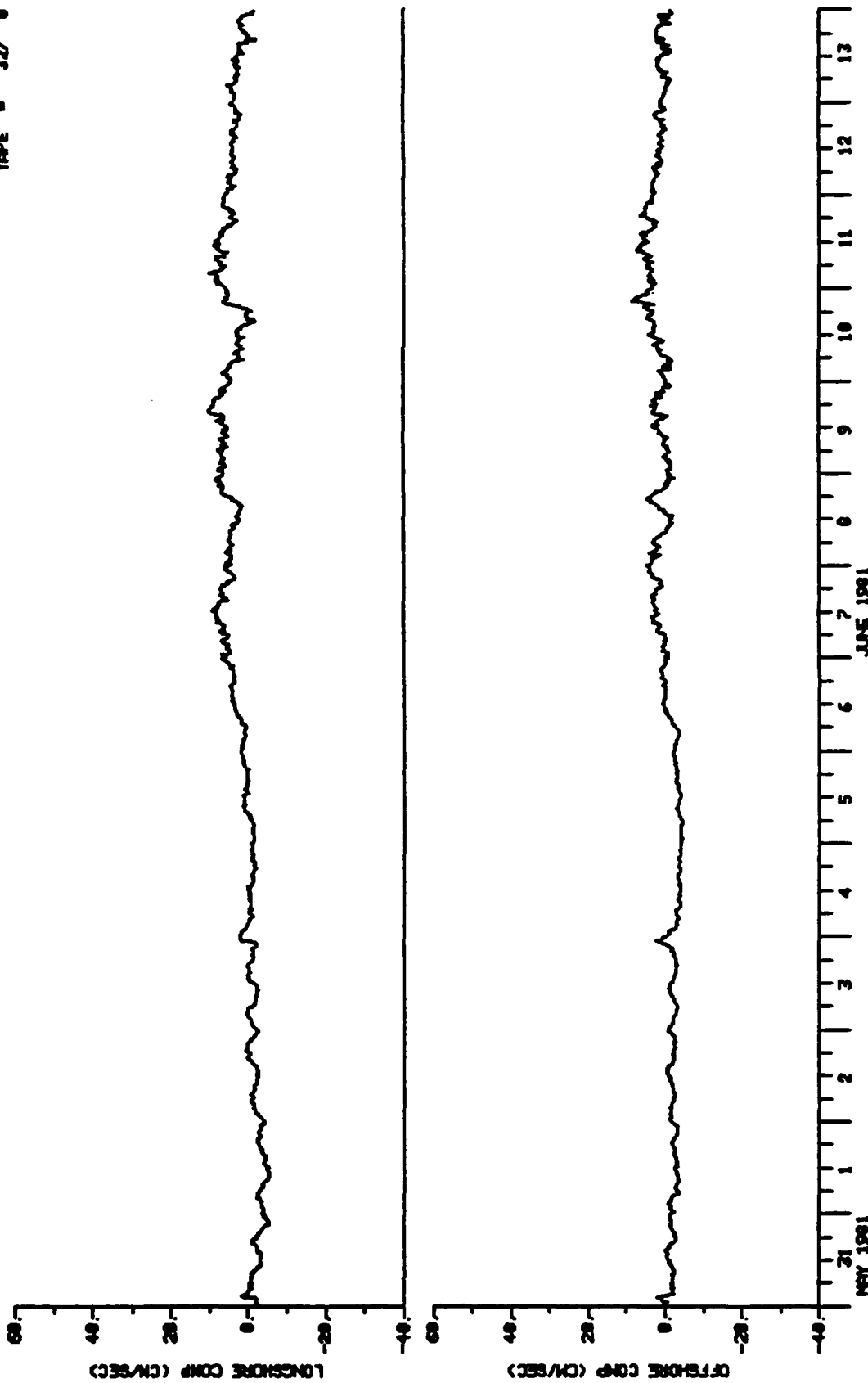
USCG BEAUFORT SEA STUDY

PAGE - 4
STN13 - CO-3
DEPTH - 250
TAPE - 32/ 0



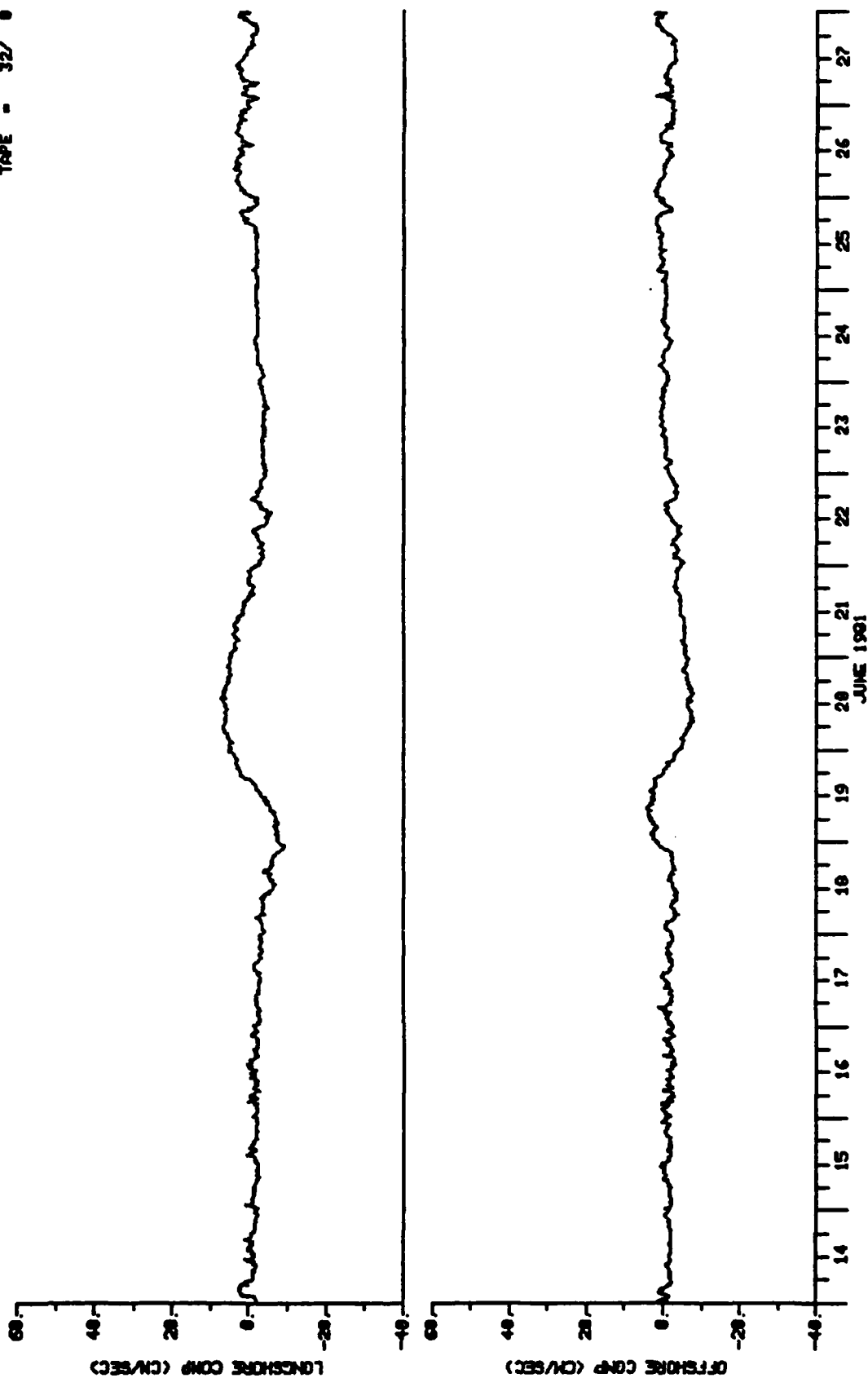
USCG BEAUFORT SEA STUDY

PAGE - 5
STNID - CG-3
DEPTH - 268
TAPE - 32/ 8



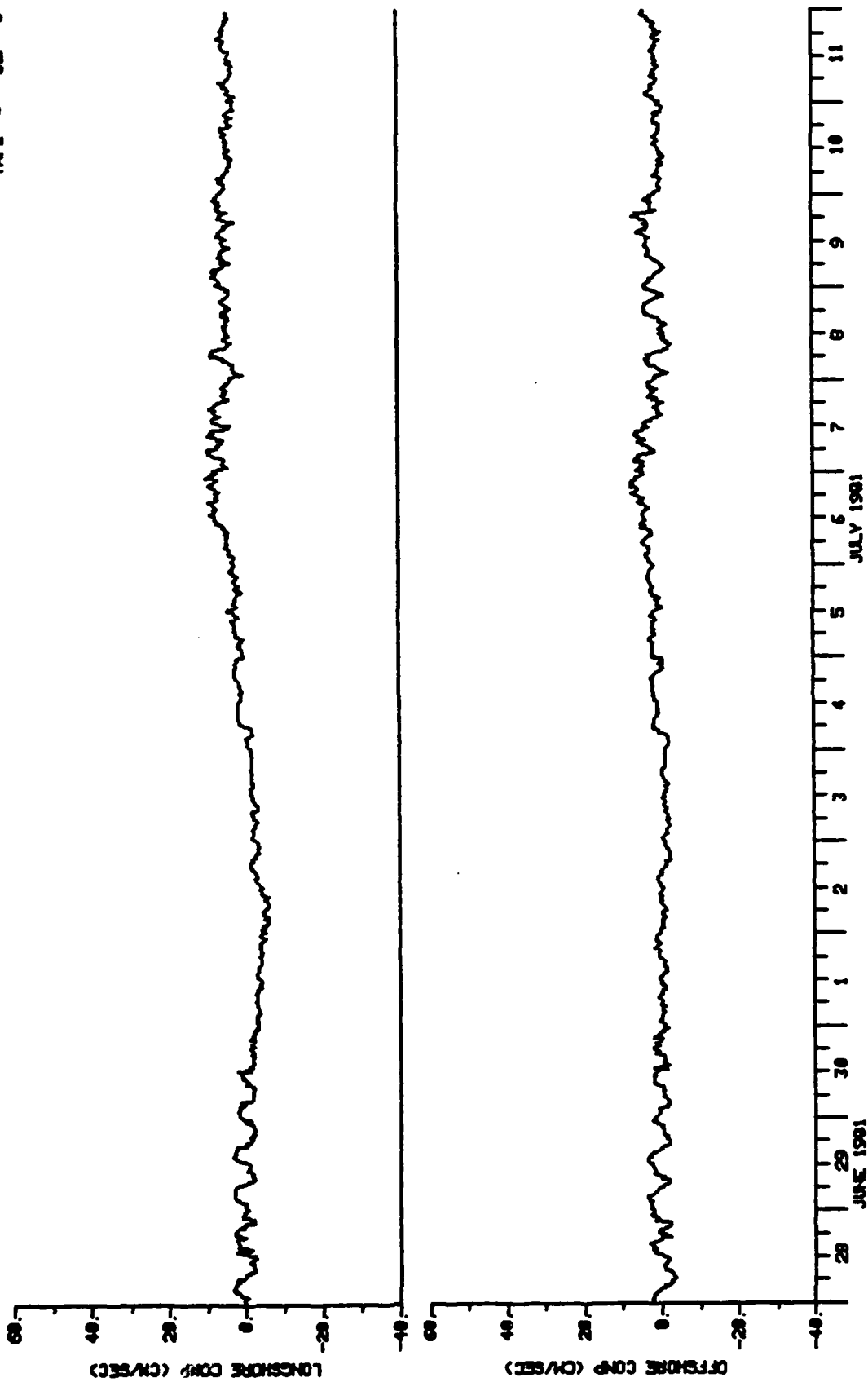
USCG BEAUFORT SEA STUDY

PAGE - 6
STATION - CO-3
DEPTH - 250
TAPE - 32/ 0



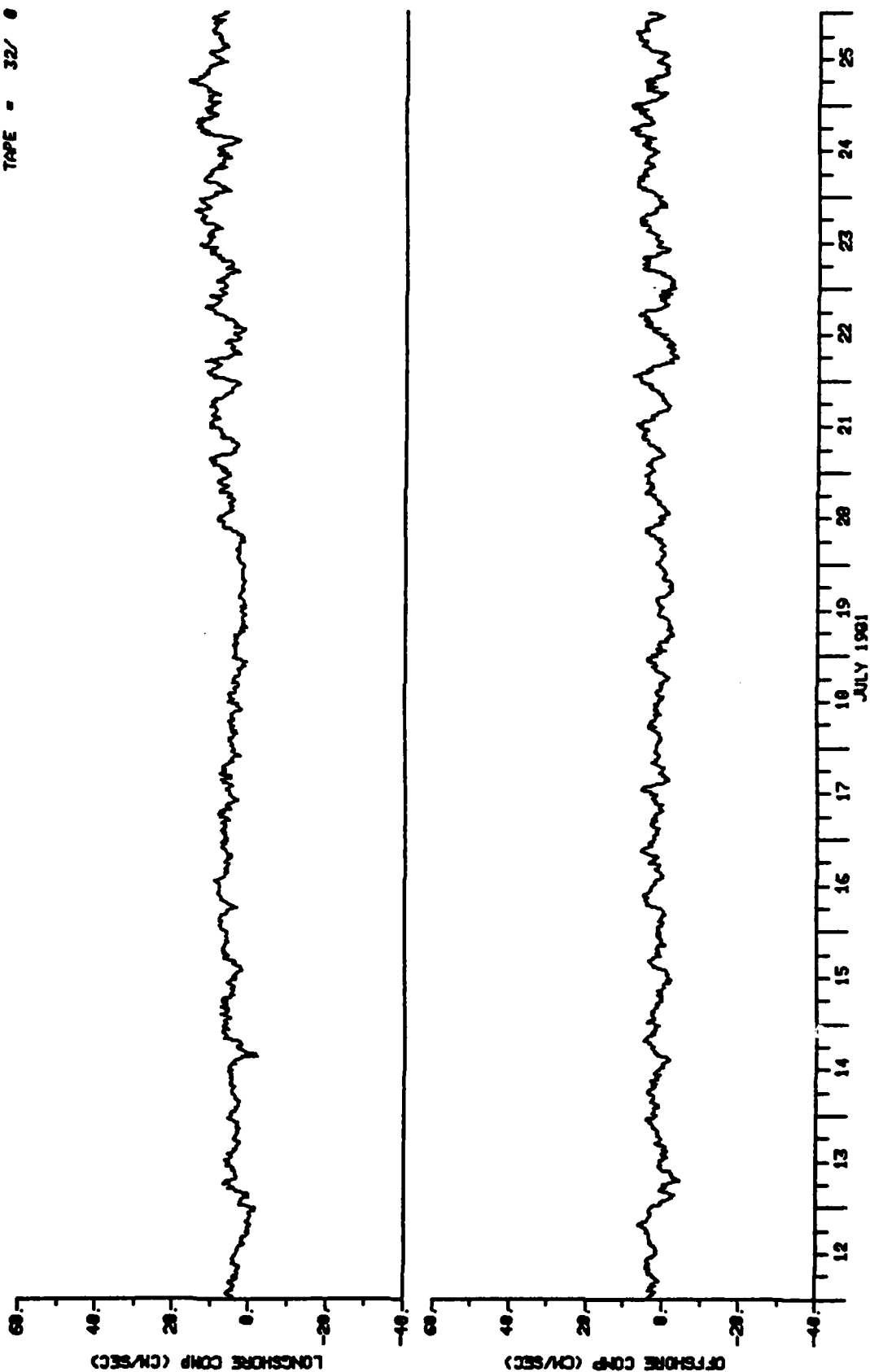
USCG BEAUFORT SEA STUDY

PAGE - 7
STN13 - CO-3
DEPTH - 250
TAPE - 32/ 8



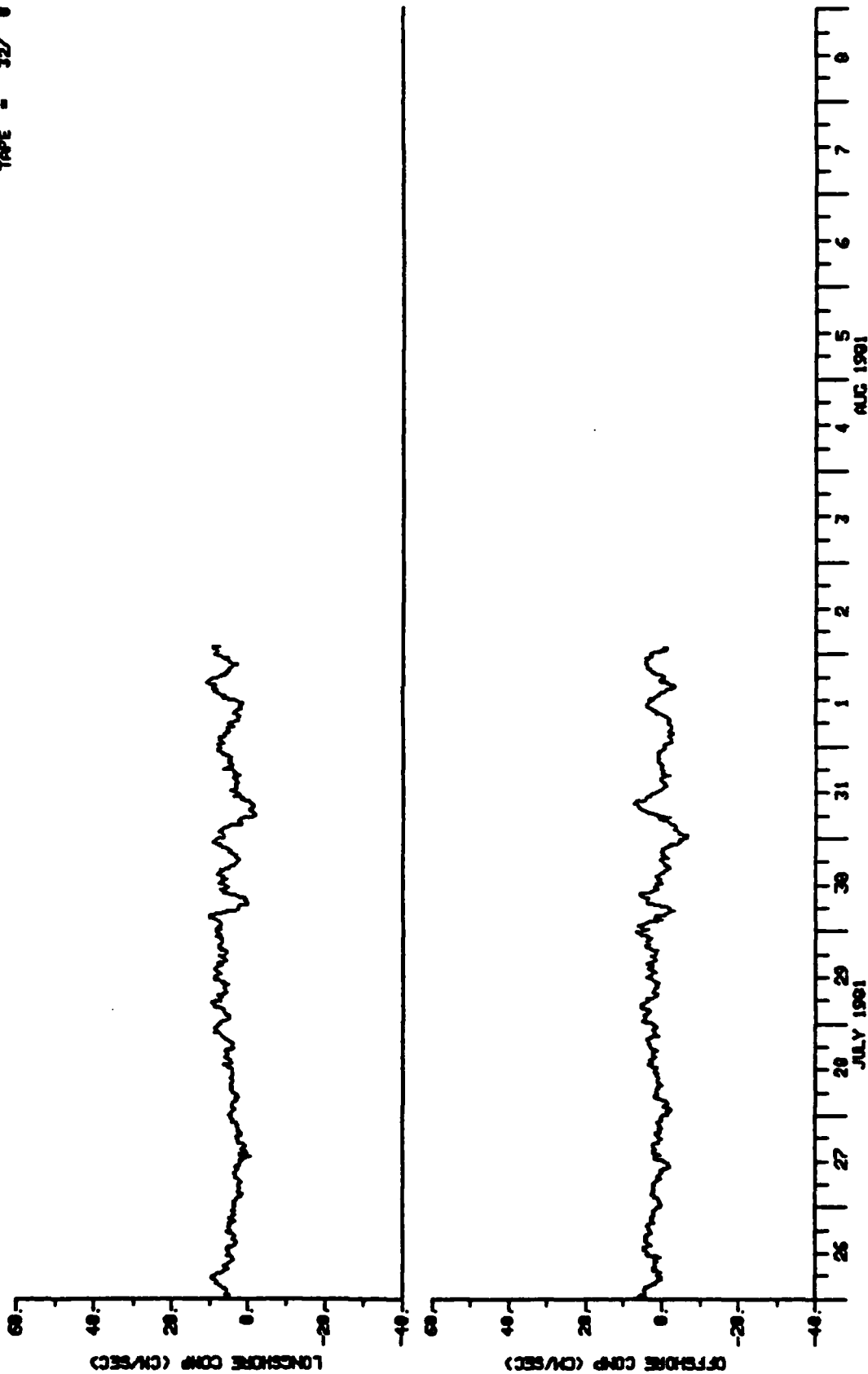
USCG BEAUFORT SEA STUDY

PAGE - 0
STNID - CG-3
DEPTH - 260
TAPE - 32/0



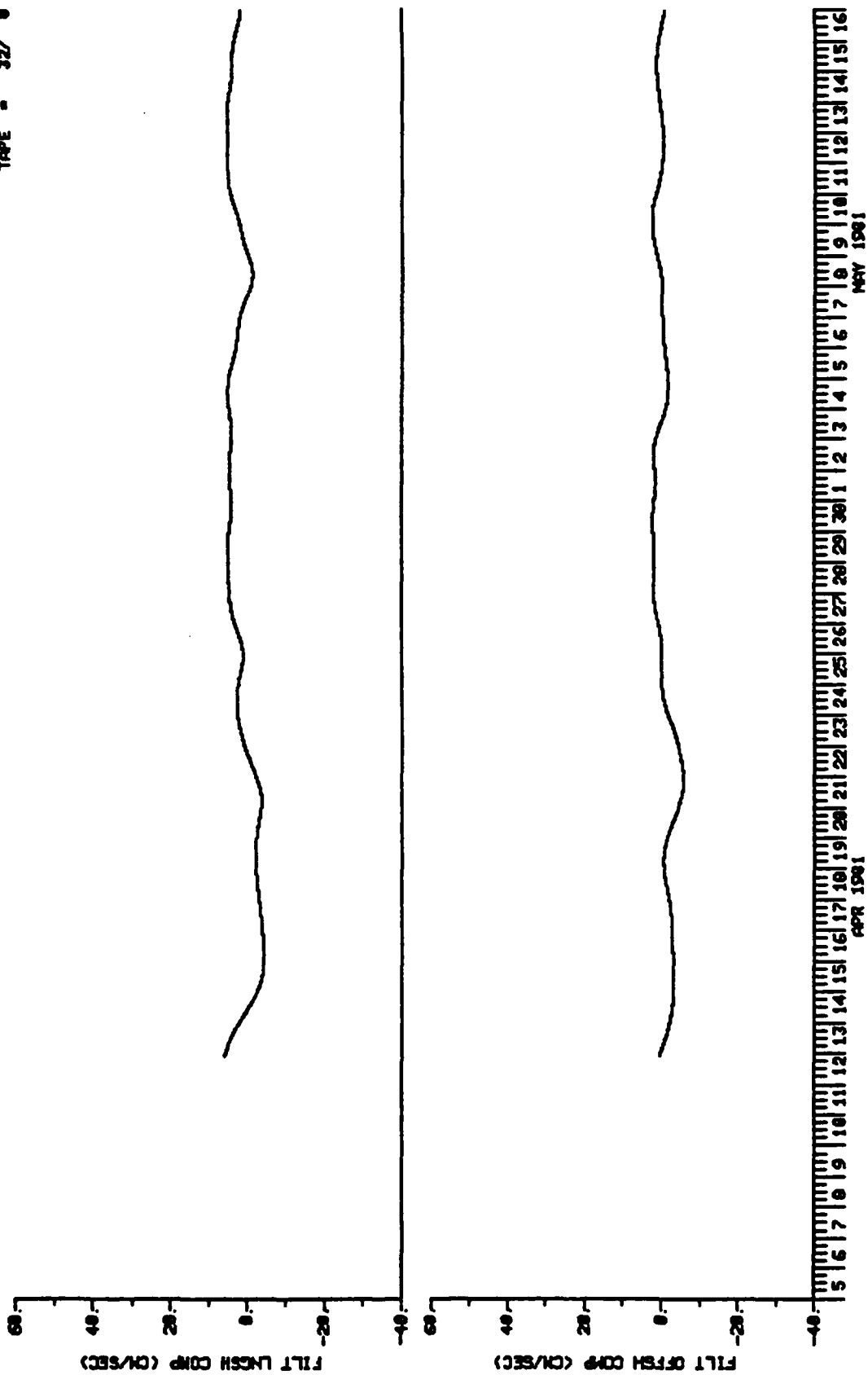
USCG BEAUFORT SEA STUDY

PAGE - 9
 STN13 - CG-3
 DEPTH - 268
 TAPE - 32/ 8



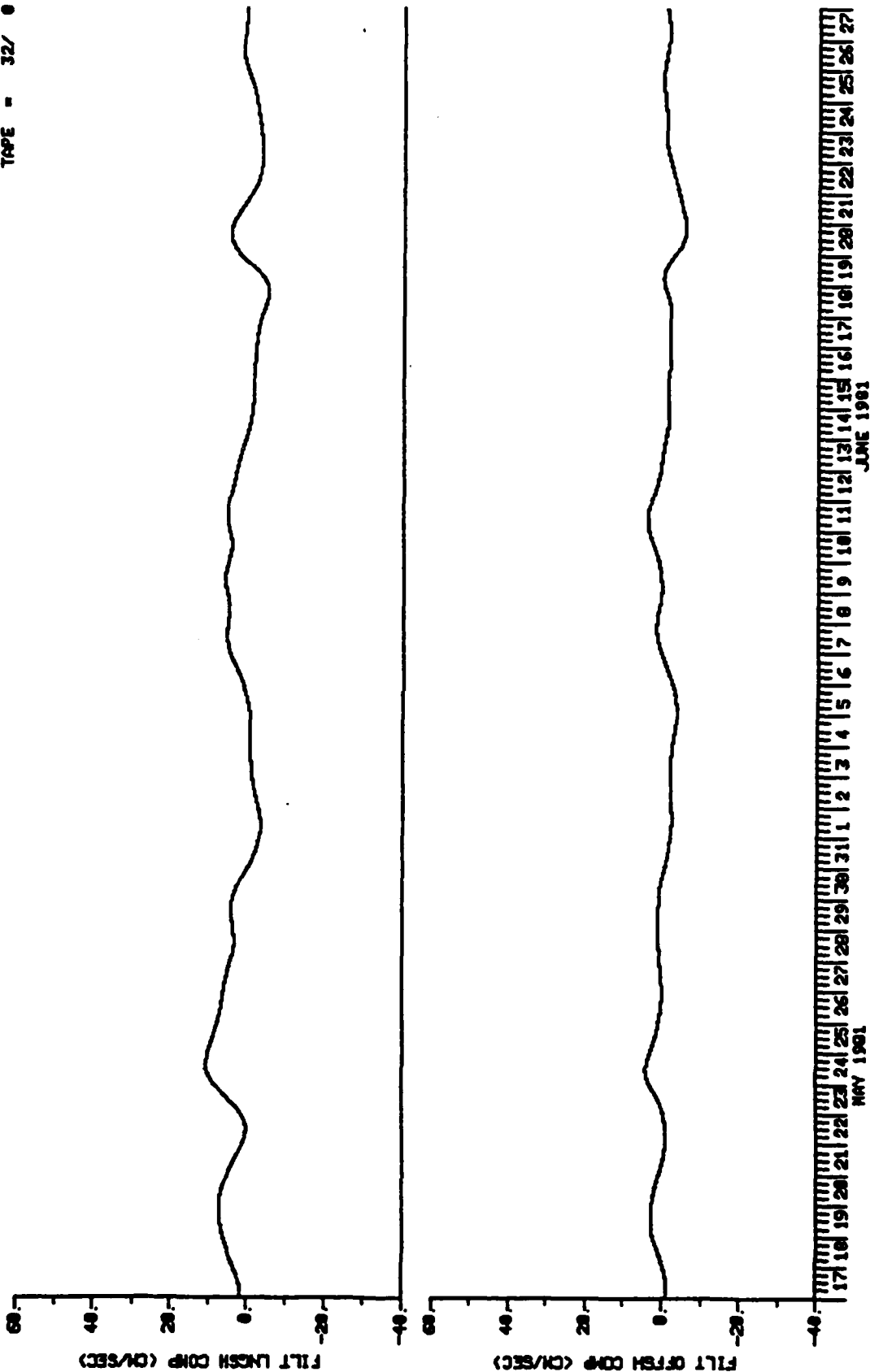
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CO-3
 ELEV - 250
 TAPE - 32/0



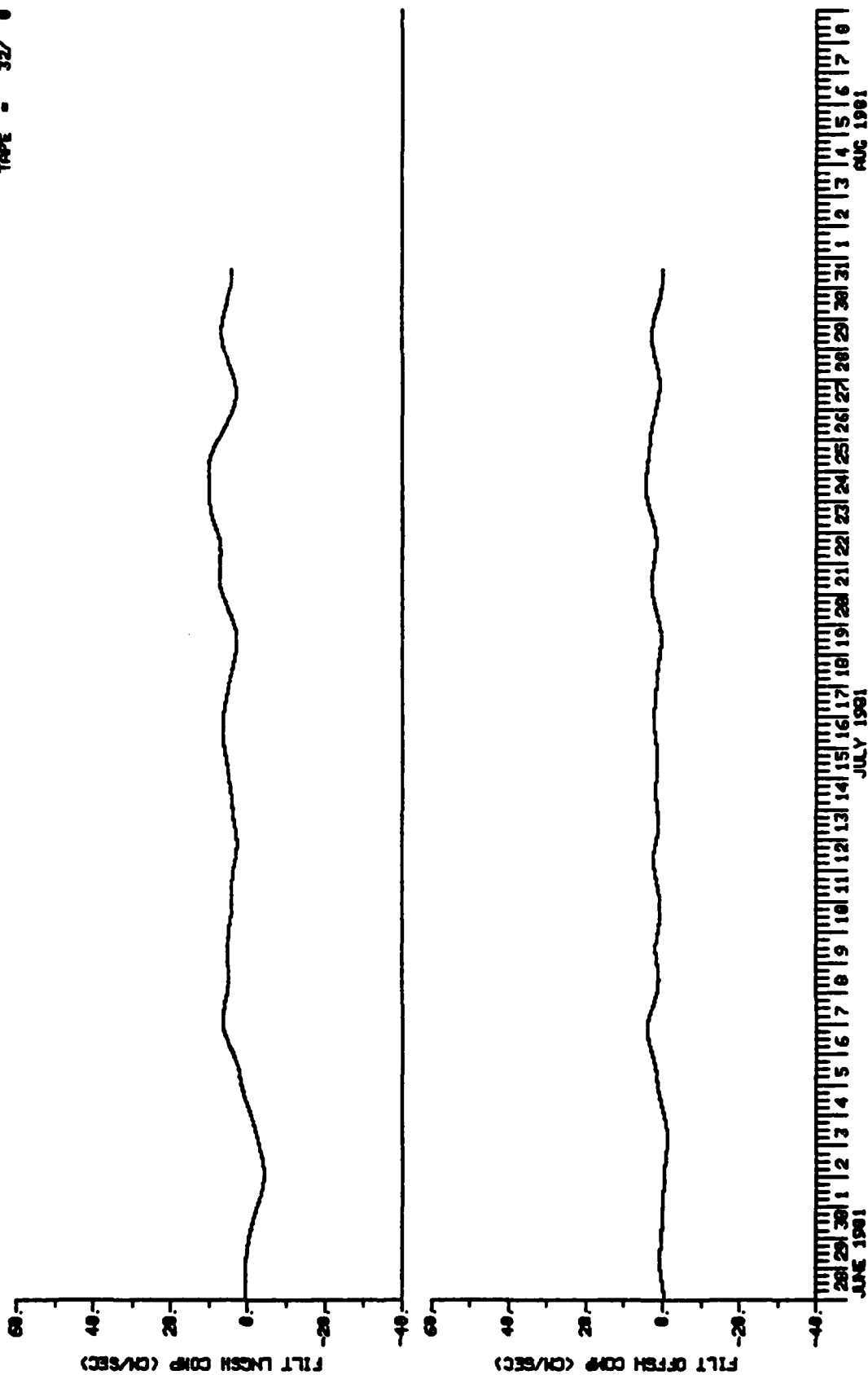
USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - CD-3
 ELEV - 258
 TAPE - 32/ 0



USCG BEAUFORT SEA STUDY

PAGE 3
 STN13 - CG-3
 ELEV - 250
 TAPE - 32/ 0



CM11

41 m depth

71° 11.3' N 132° 09.0' W

5 April 1981 to 9 August 1981

Longshore direction is 65° T

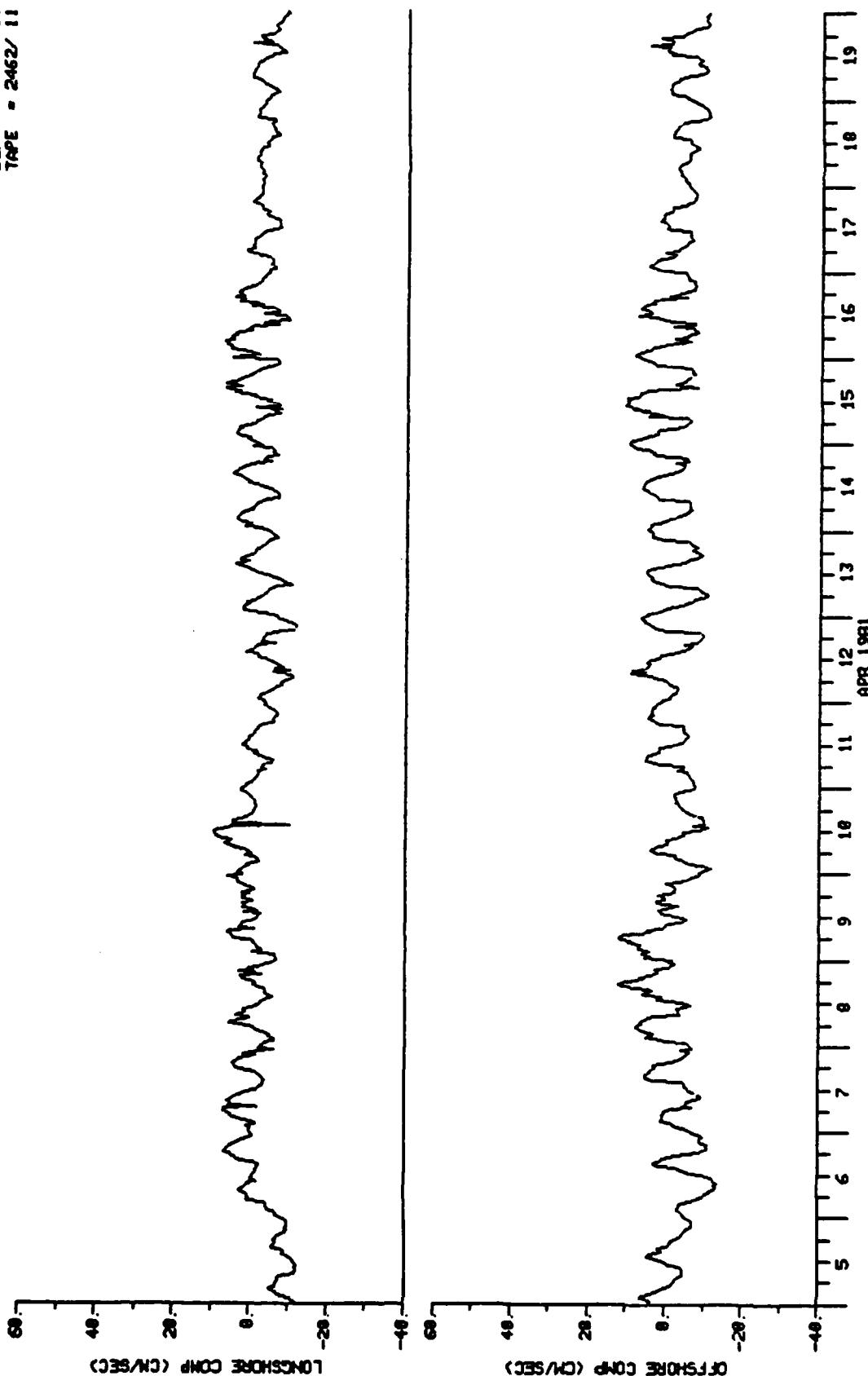
Offshore direction is 335° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

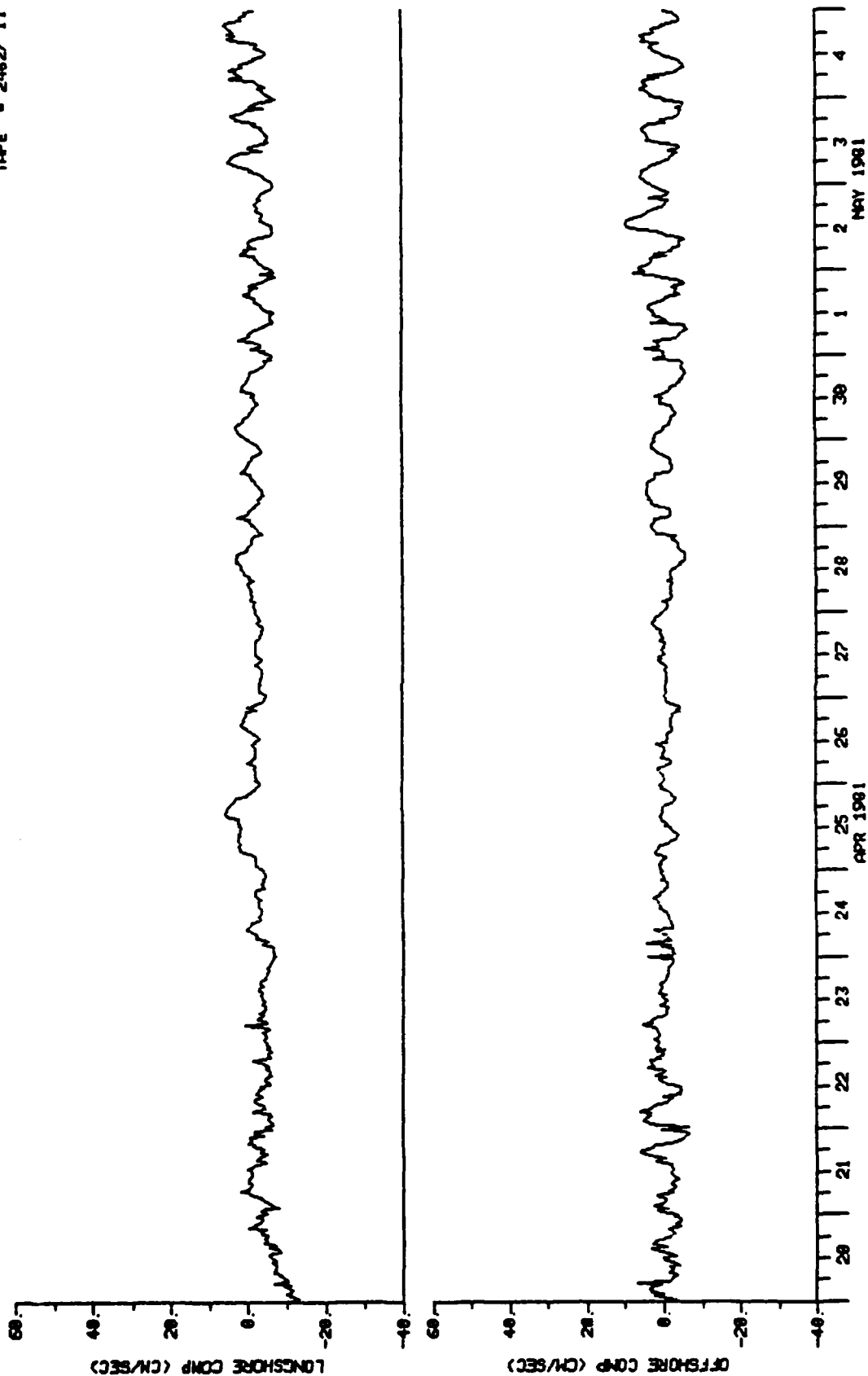
USCG BEAUFORT SEA STUDY

PAGE - 1
STN13 - CH-1
DEPTH - 35
TAPE - 2462/ 11



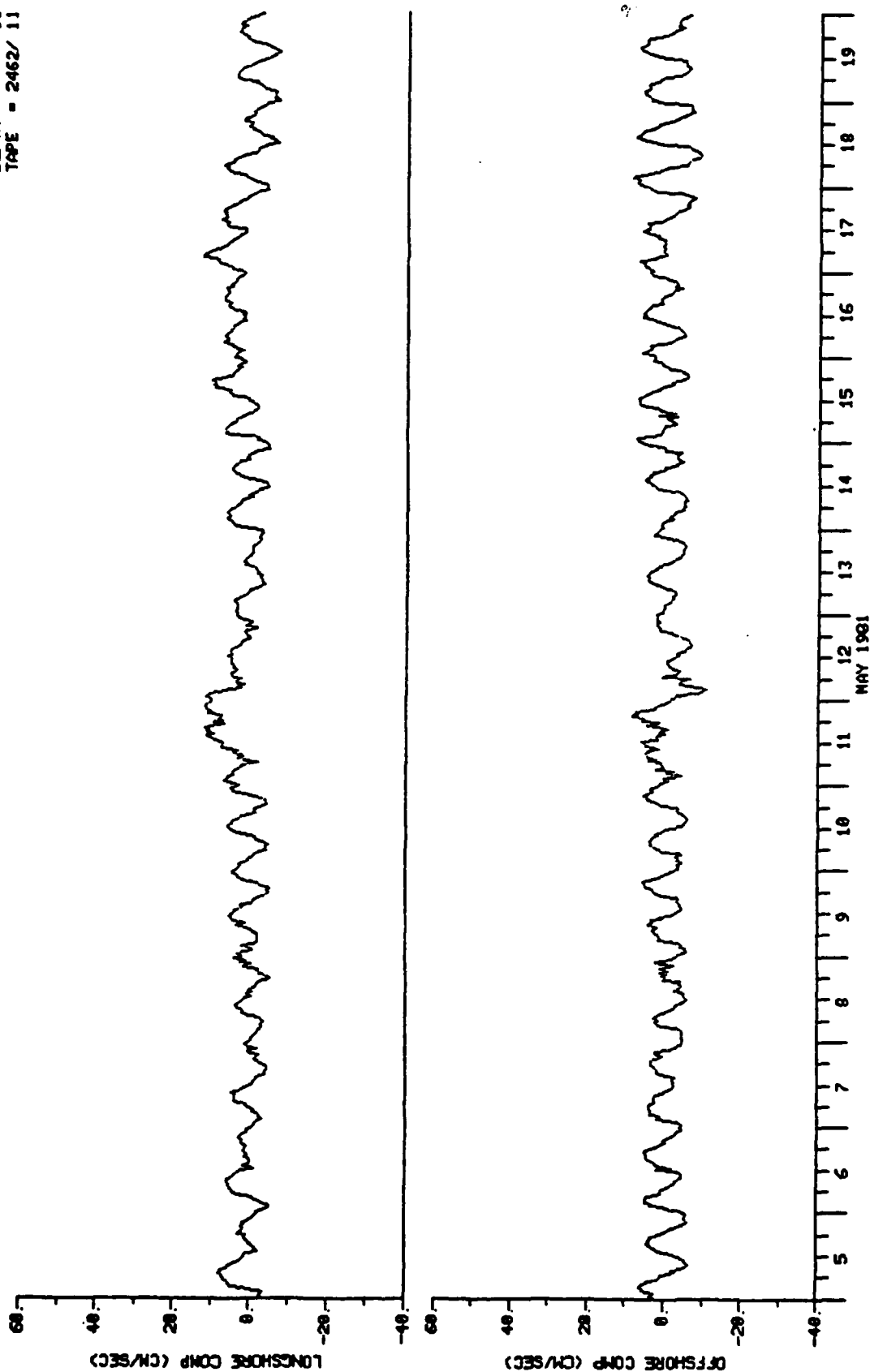
USCG BEAUFORT SEA STUDY

PAGE - 2
STNID - CH-1
DEPTH - 35
TAPE - 2462/11



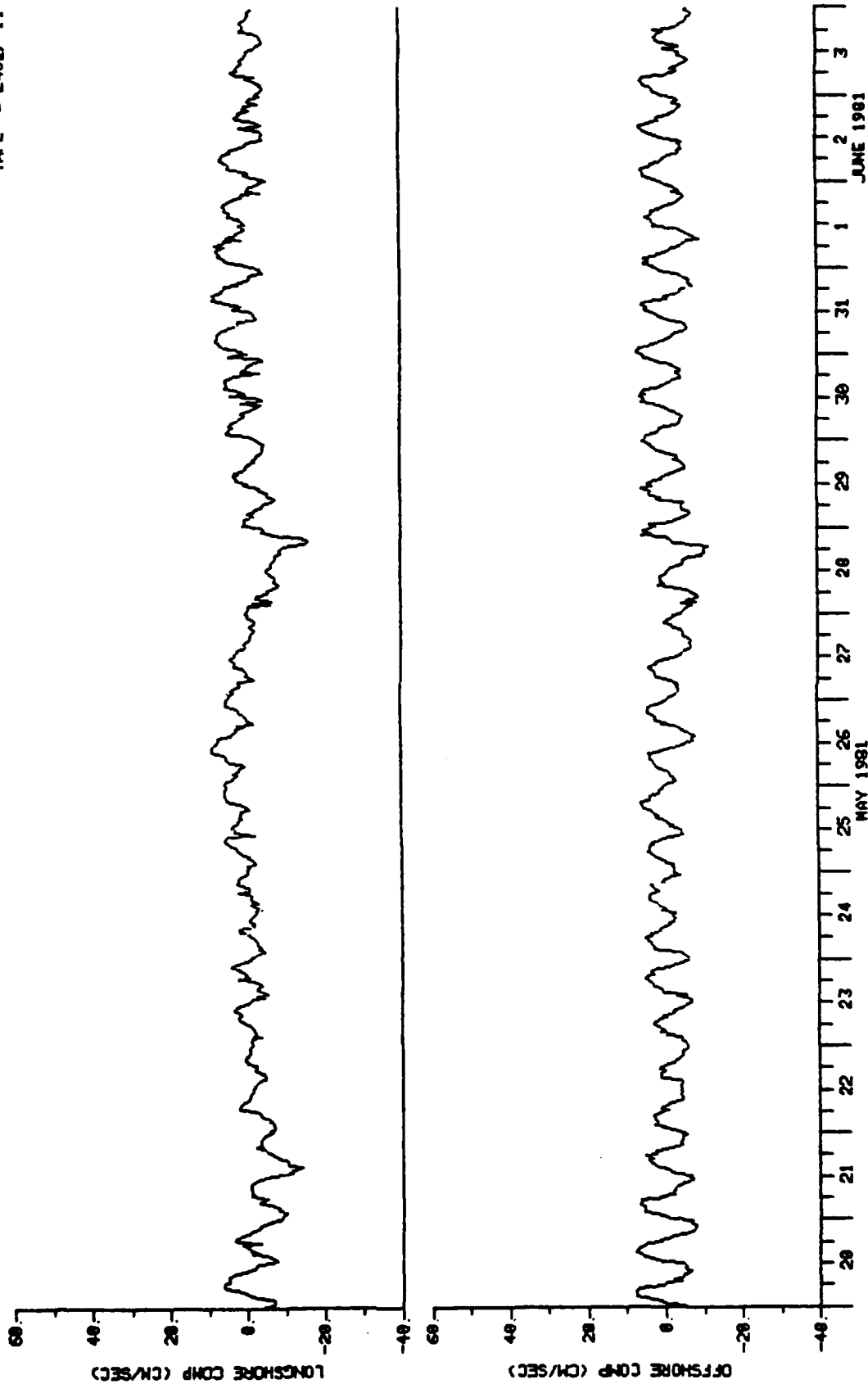
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CH-1
DEPTH - 35
TAPE - 2462/ 11



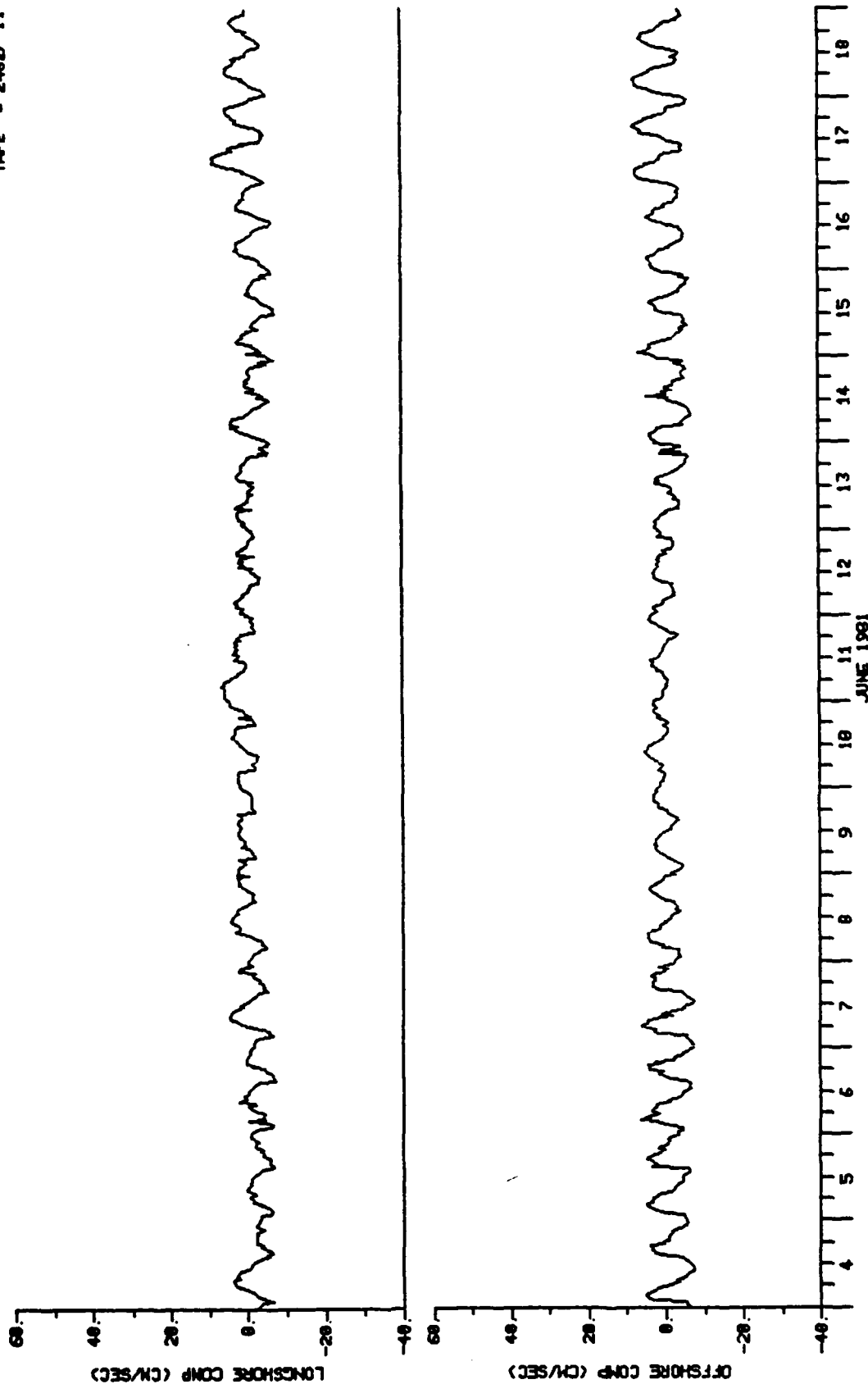
USCG BEAUFORT SEA STUDY

PAGE - 4
STNID - CH-1
DEPTH - 35
TAPE - 2462/ 11



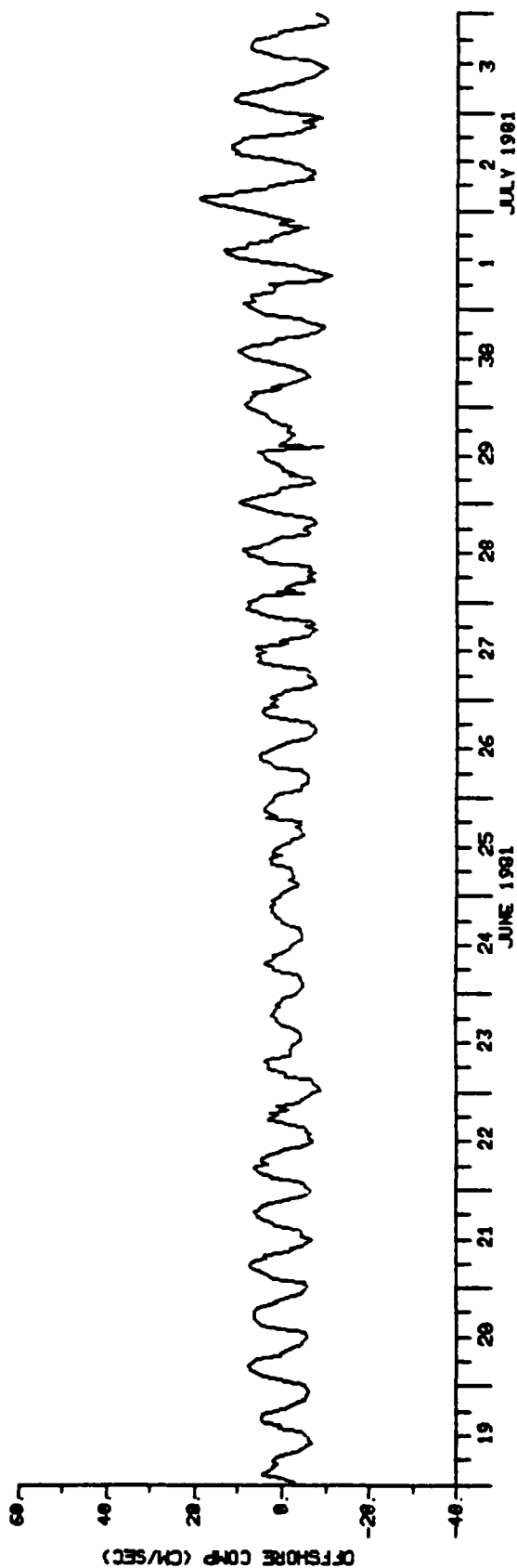
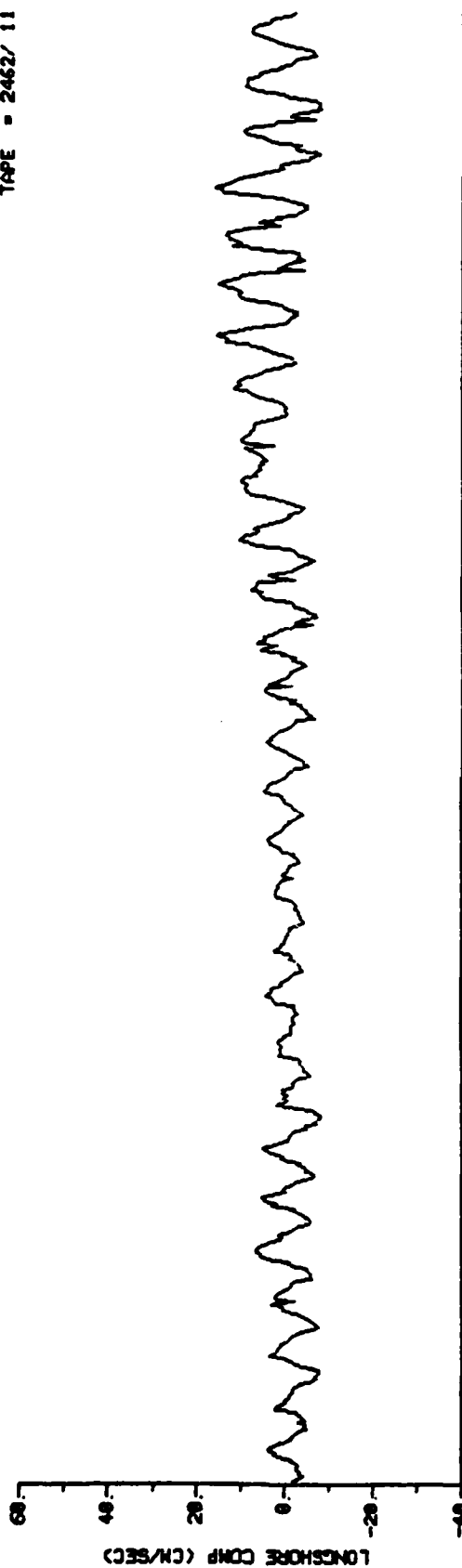
USCG BEAUFORT SEA STUDY

PAGE - 5
STNID - CH-1
DEPTH - 35
TAPE - 2462/ 11



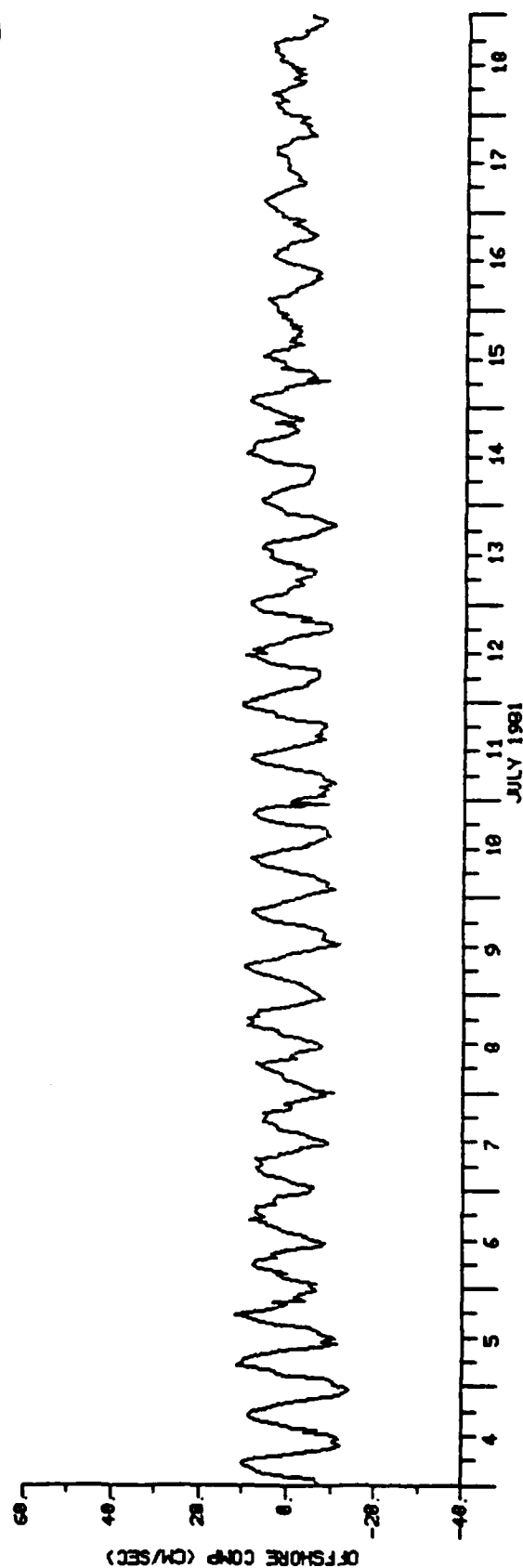
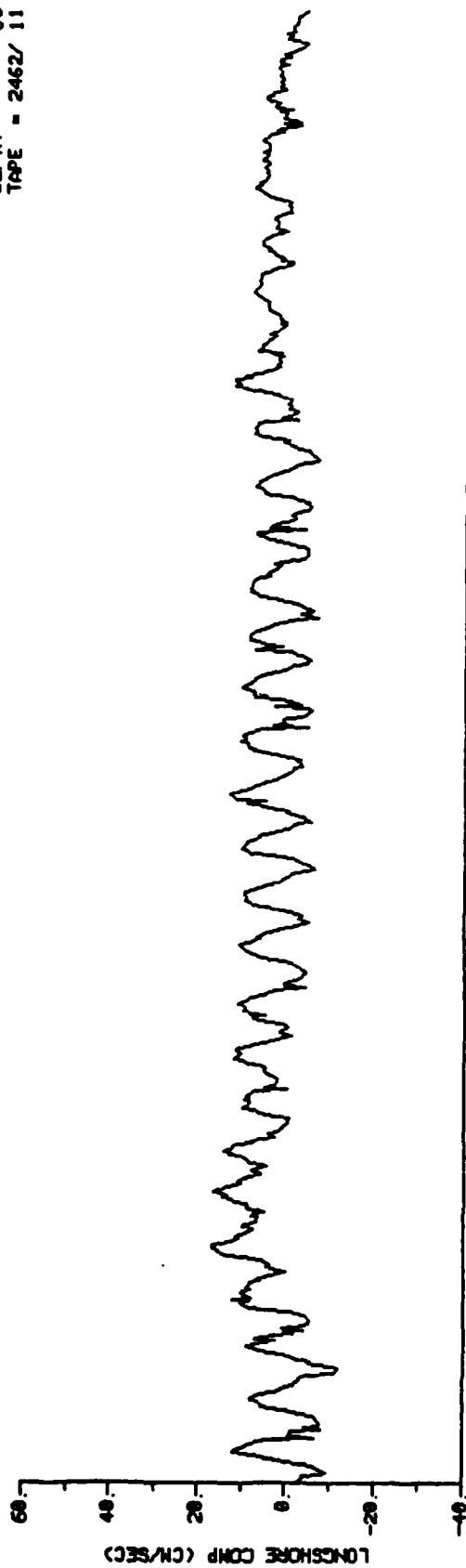
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - CM-1
DEPTH - 35
TAPE - 2462/ 11



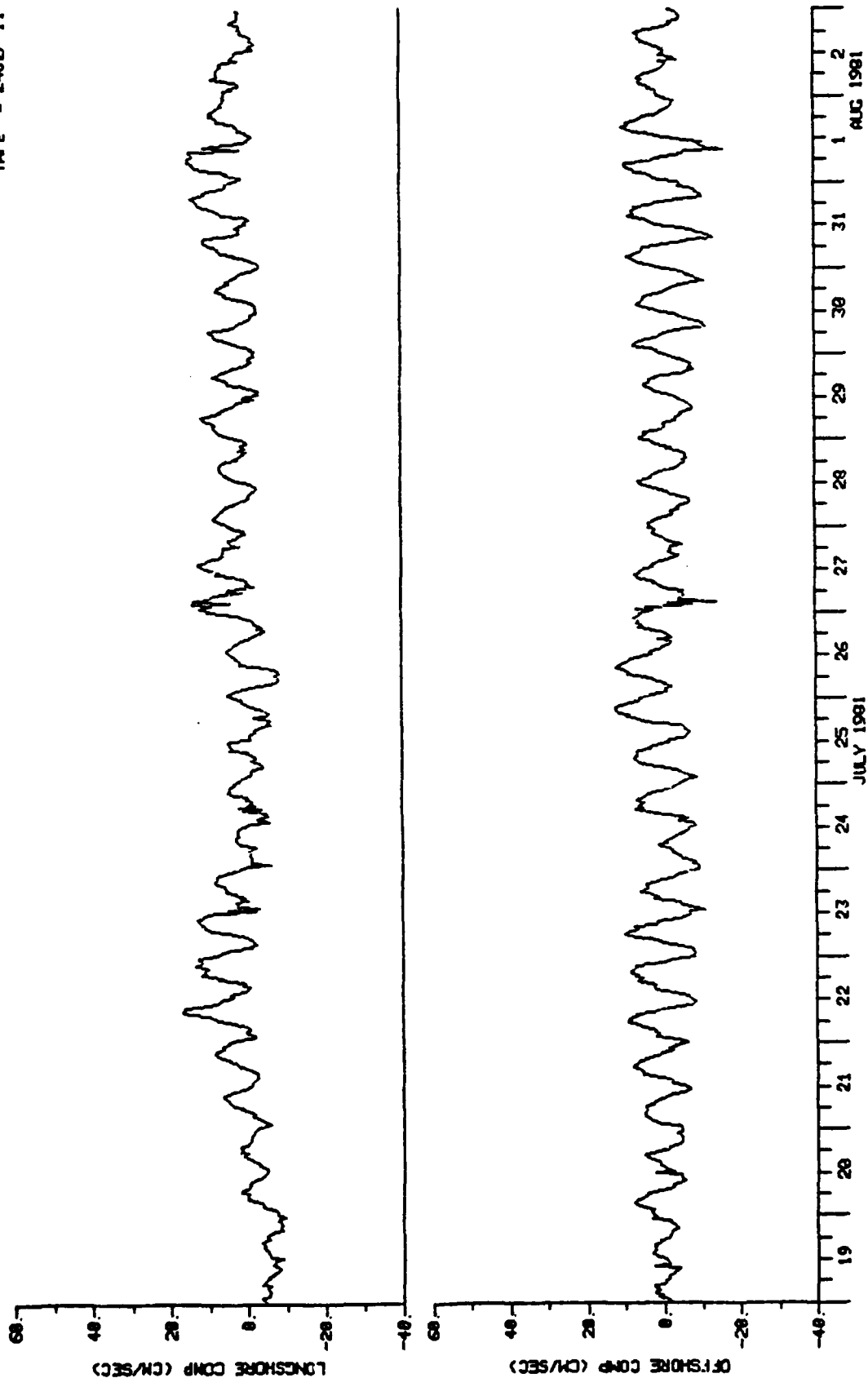
USCG BEAUFORT SEA STUDY

PAGE - 7
STNID - CH-1
DEPTH - 35
TAPE - 2462/ 11



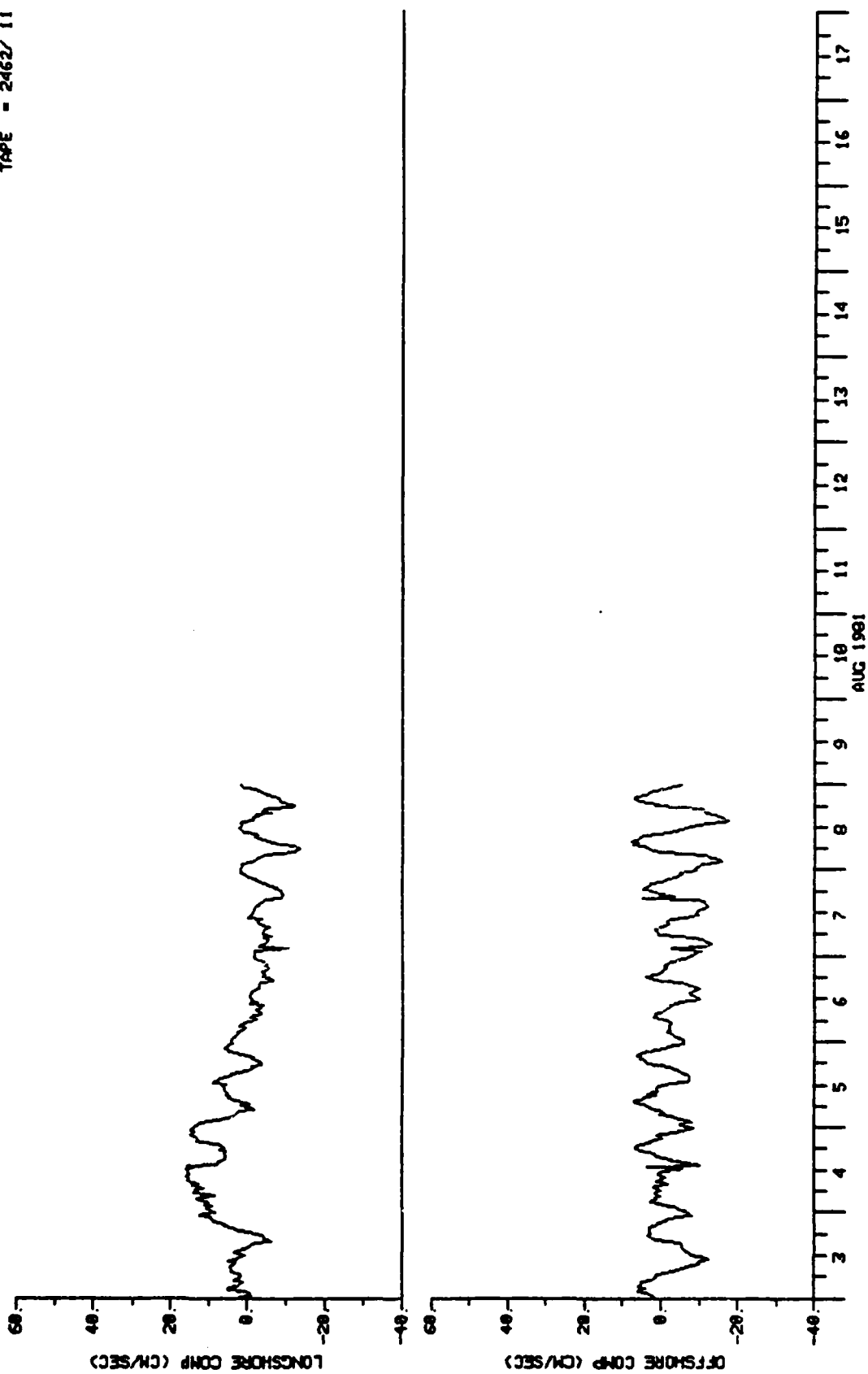
USCG BEAUFORT SEA STUDY

PAGE - 8
STNID - CH-1
DEPTH - 35
TAPE - 2462/11



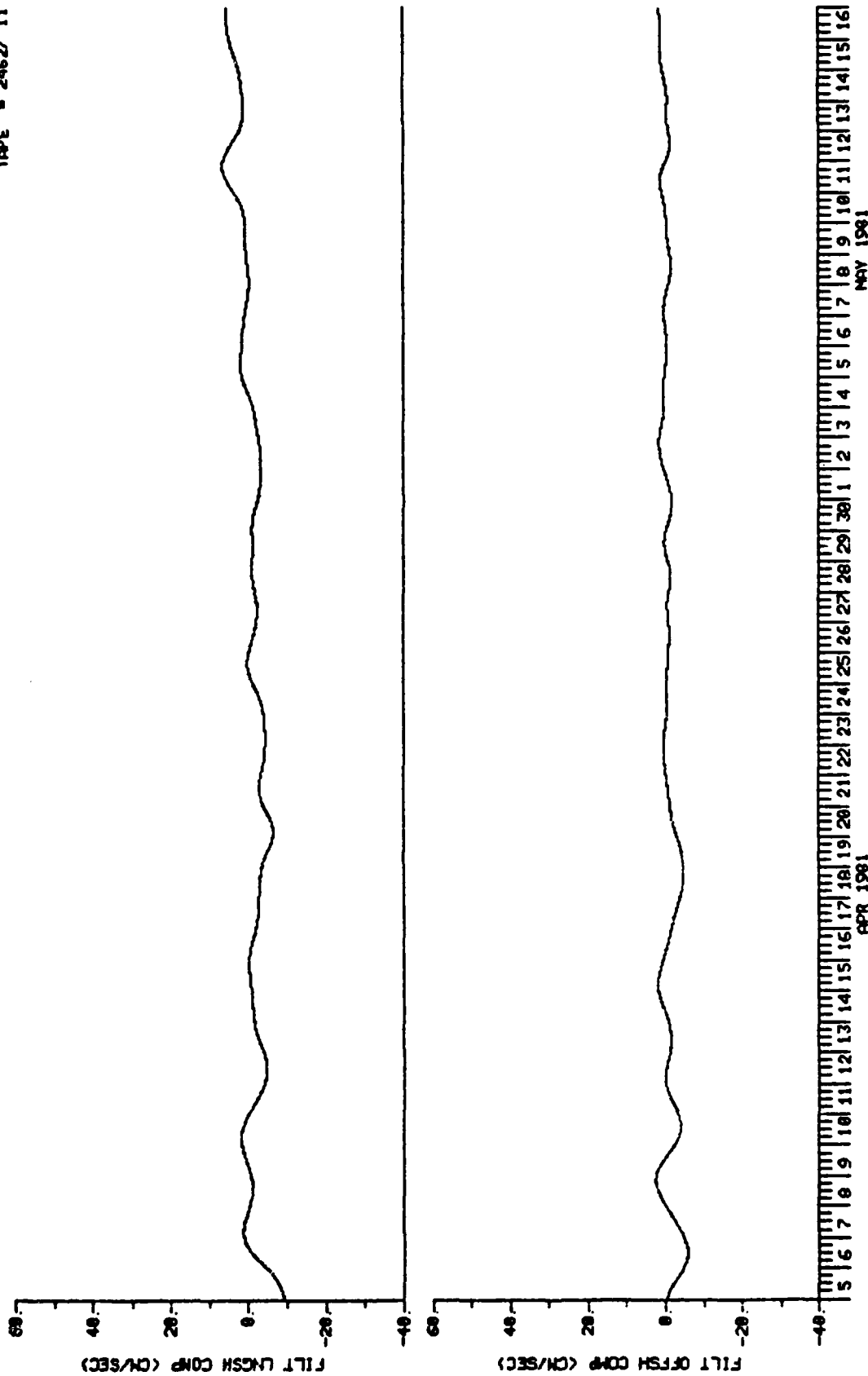
USCG BEAUFORT SEA STUDY

PAGE - 9
STNID - CH-1
DEPTH - 35
TAPE - 2462/ 11



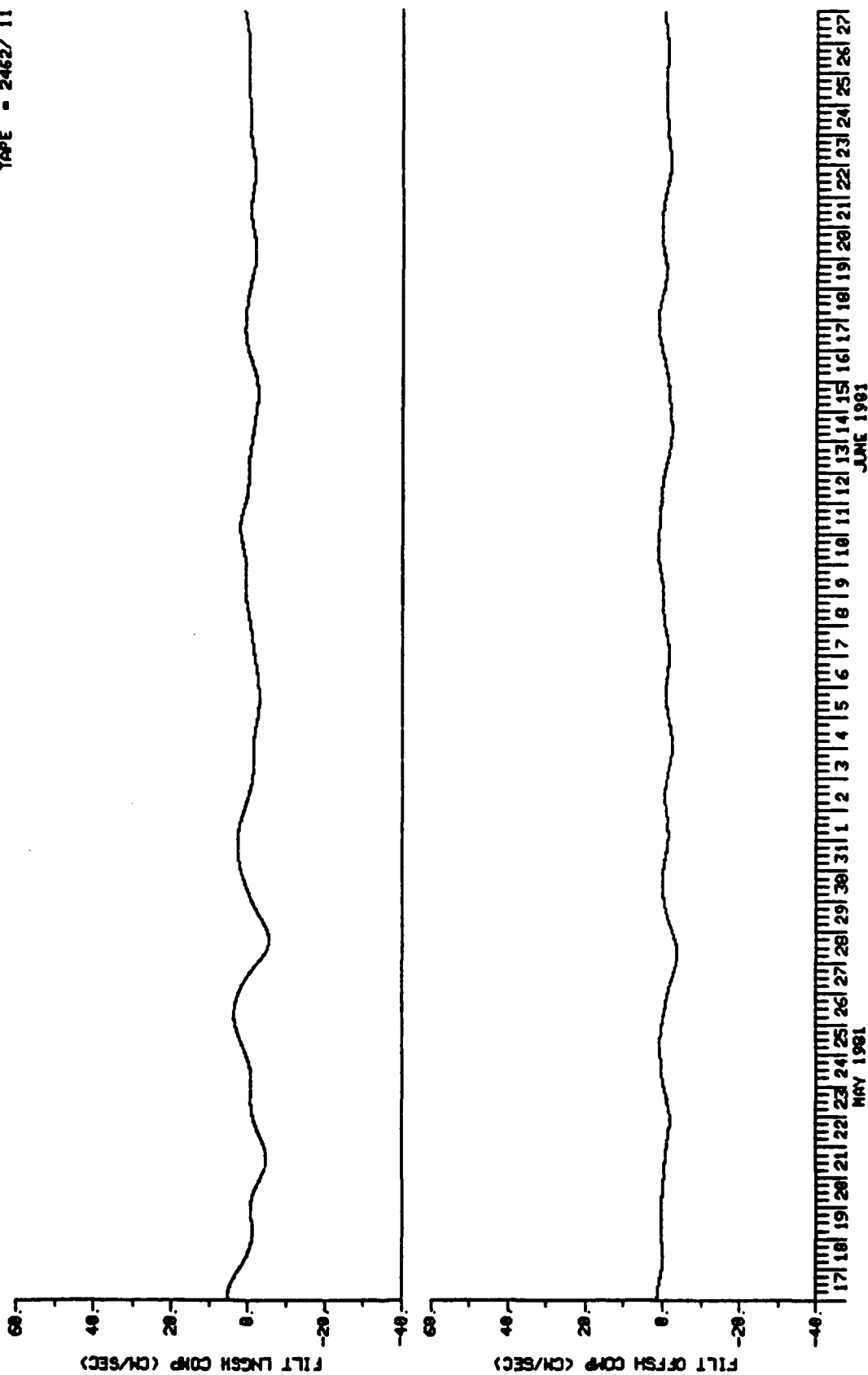
USCG BEAUFORT SEA STUDY

PAGE - 1
 STNID - CH-1
 ELEV - 35
 TAPE - 2462/ 11



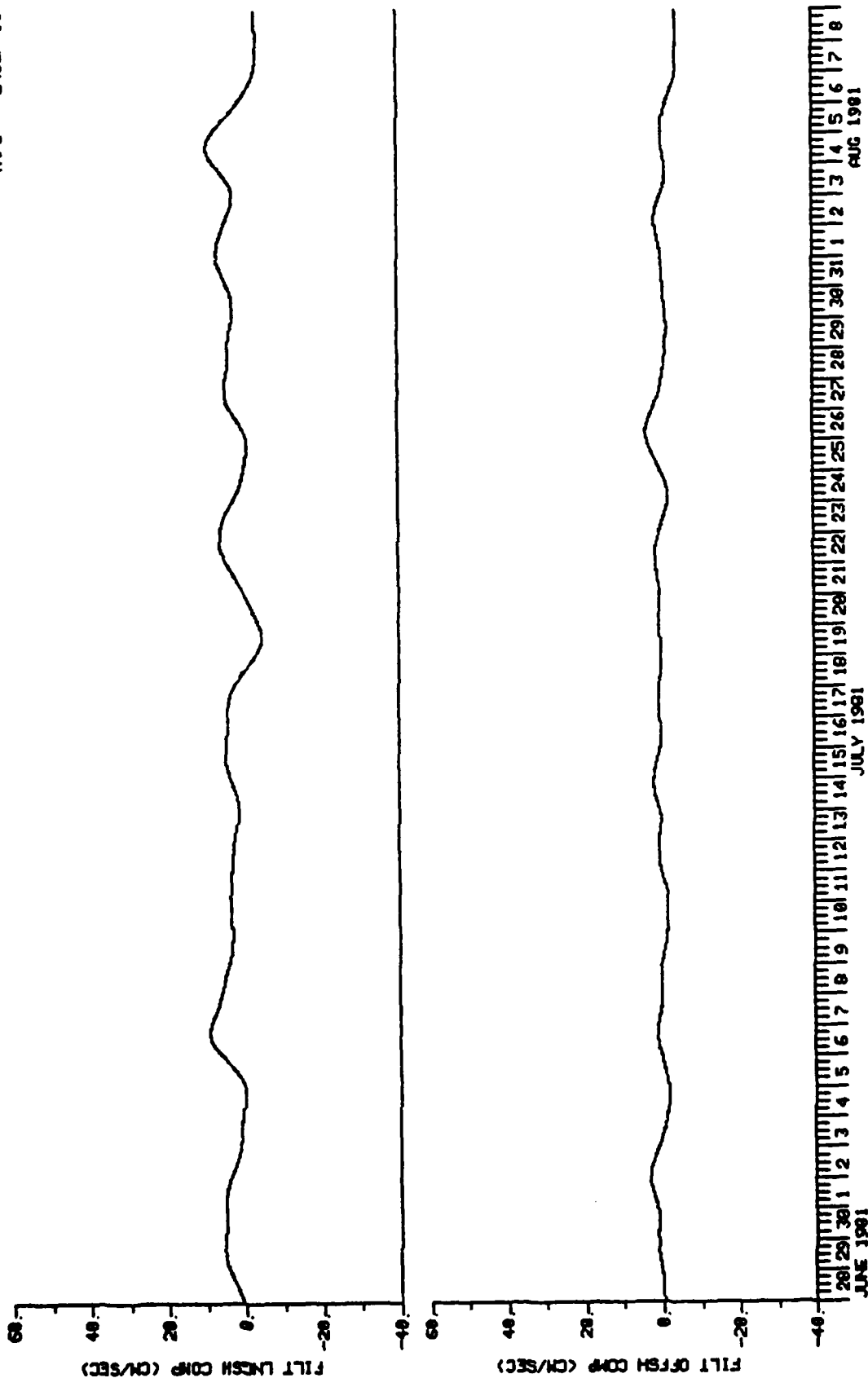
USCG BEAUFORT SEA STUDY

PAGE - 2
 STNID - CH-1
 ELEV - 35
 TAPE - 2462/ 11



USCG BEAUFORT SEA STUDY

PAGE - 3
 STNID - CH-1
 ELEV - 35
 TAPE - 2462/ 11



CM12

94 m depth

71° 11.3' N 132° 09.0' W

5 April 1981 to 9 August 1981

Longshore direction is 65° T

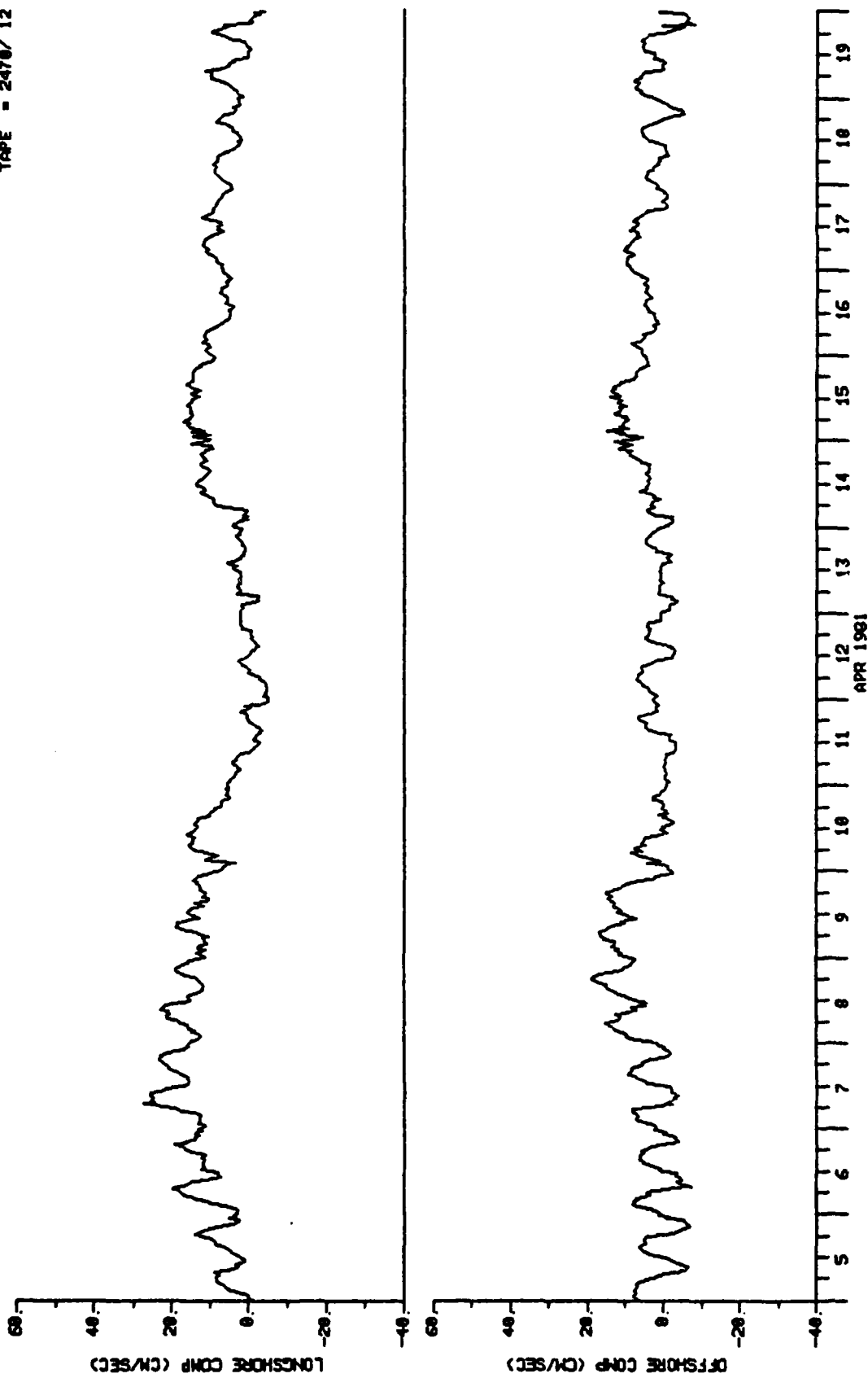
Offshore direction is 335° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

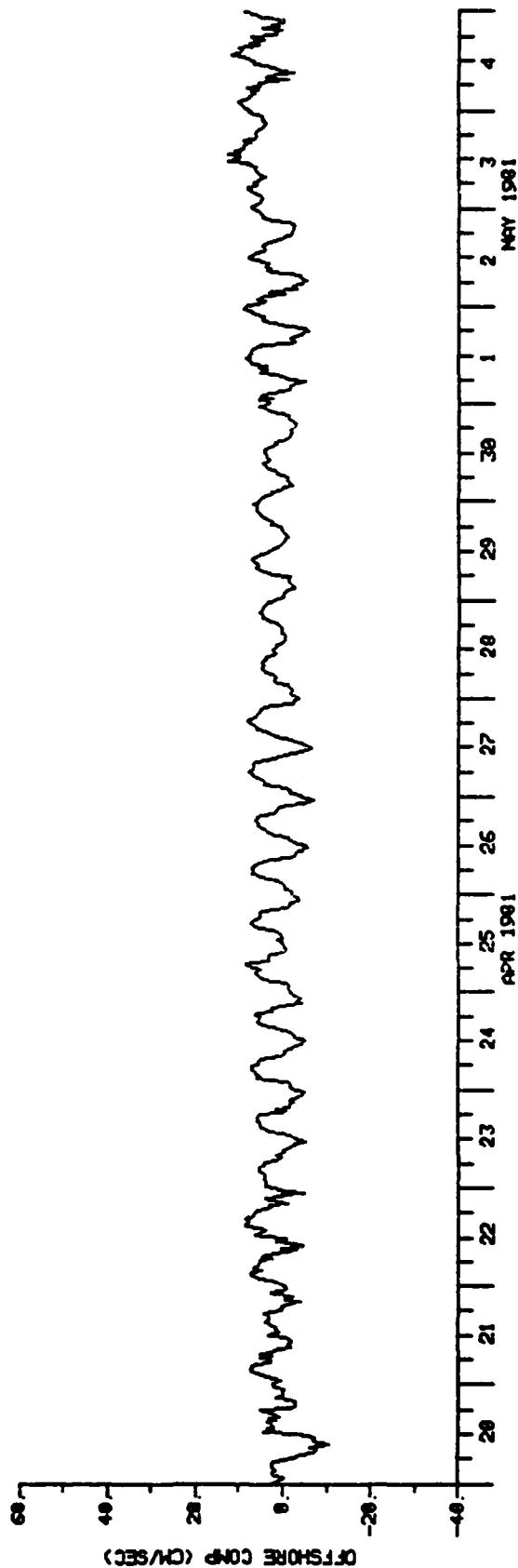
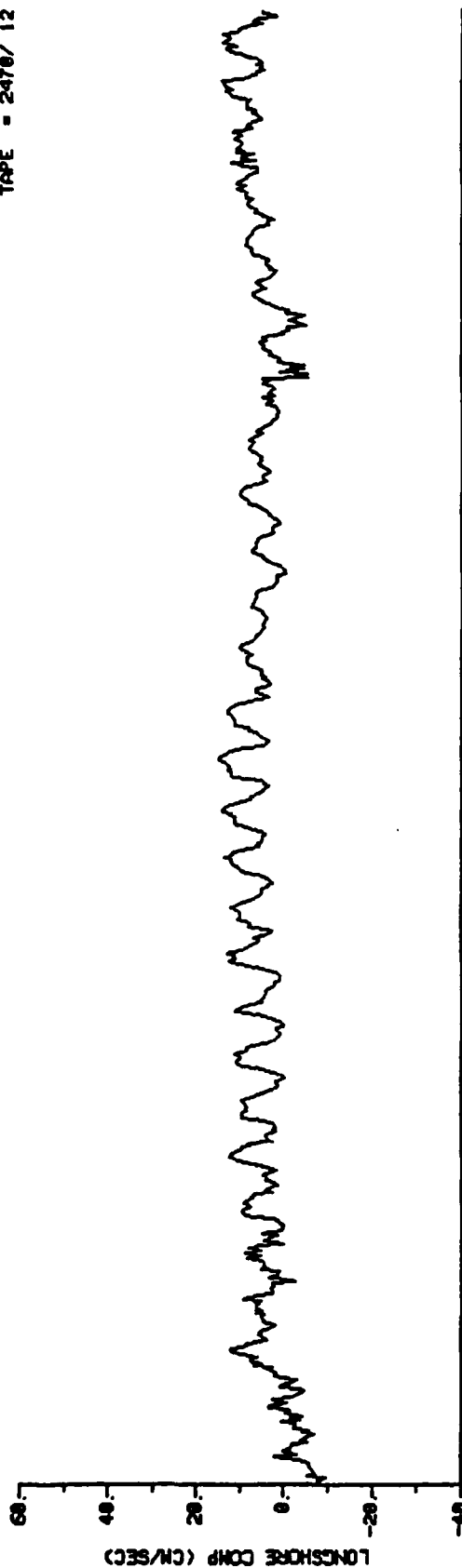
USCG BEAUFORT SEA STUDY

PAGE - 1
STN13 - CH-1
DEPTH - 100
TAPE - 2478/12



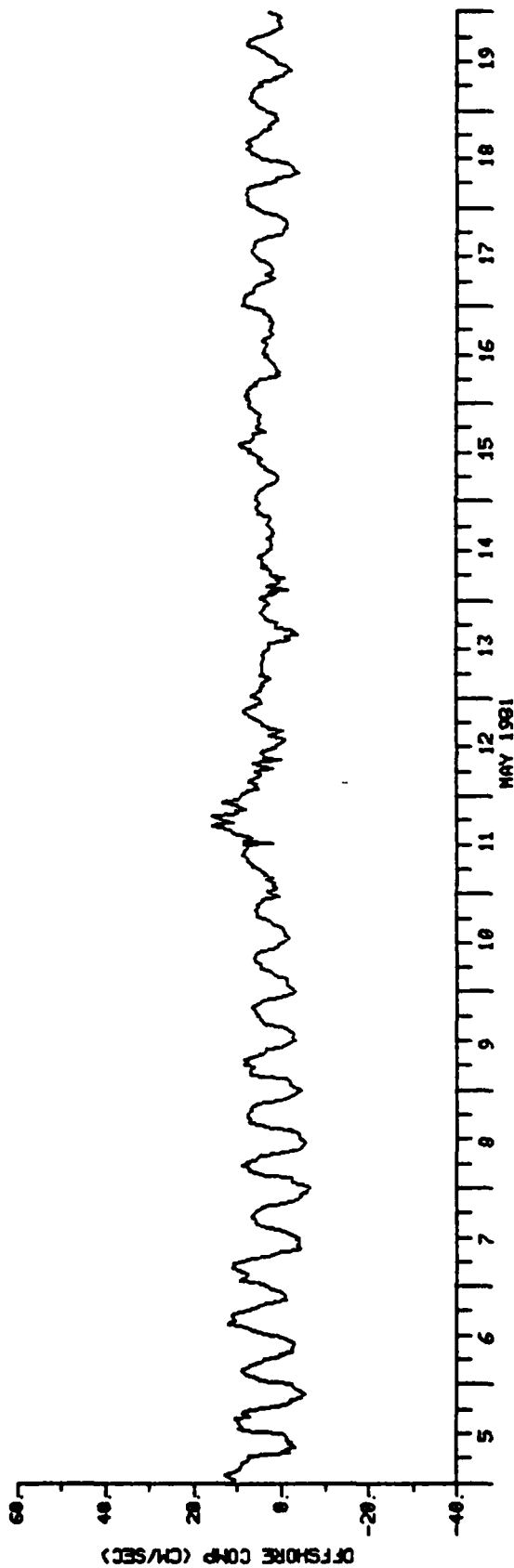
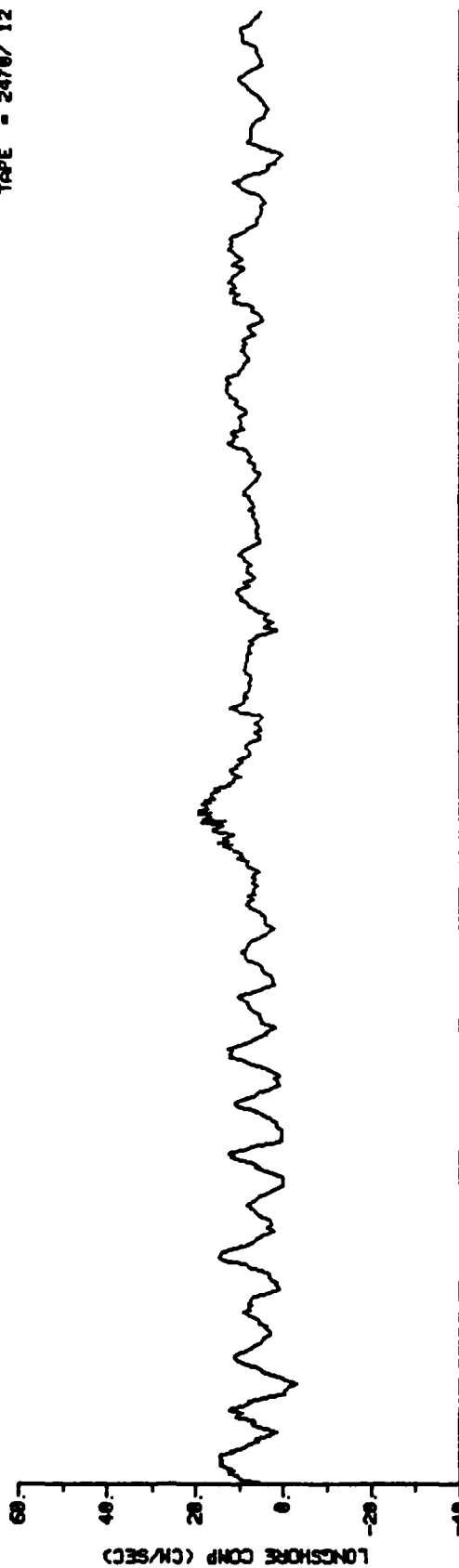
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CH-1
DEPTH - 100
TAPE - 2470/12



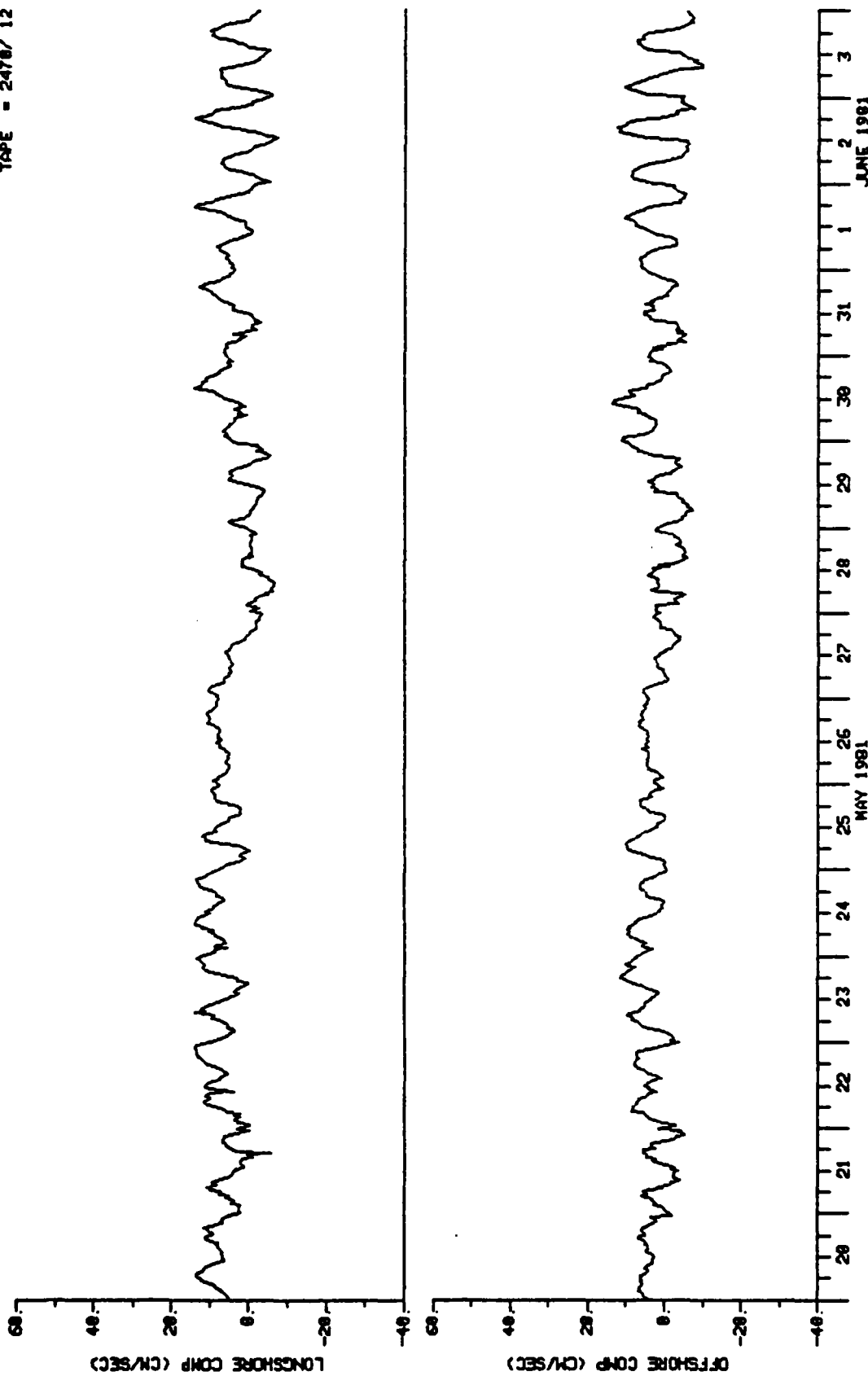
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CH-1
DEPTH - 100
TAPE - 2476/12



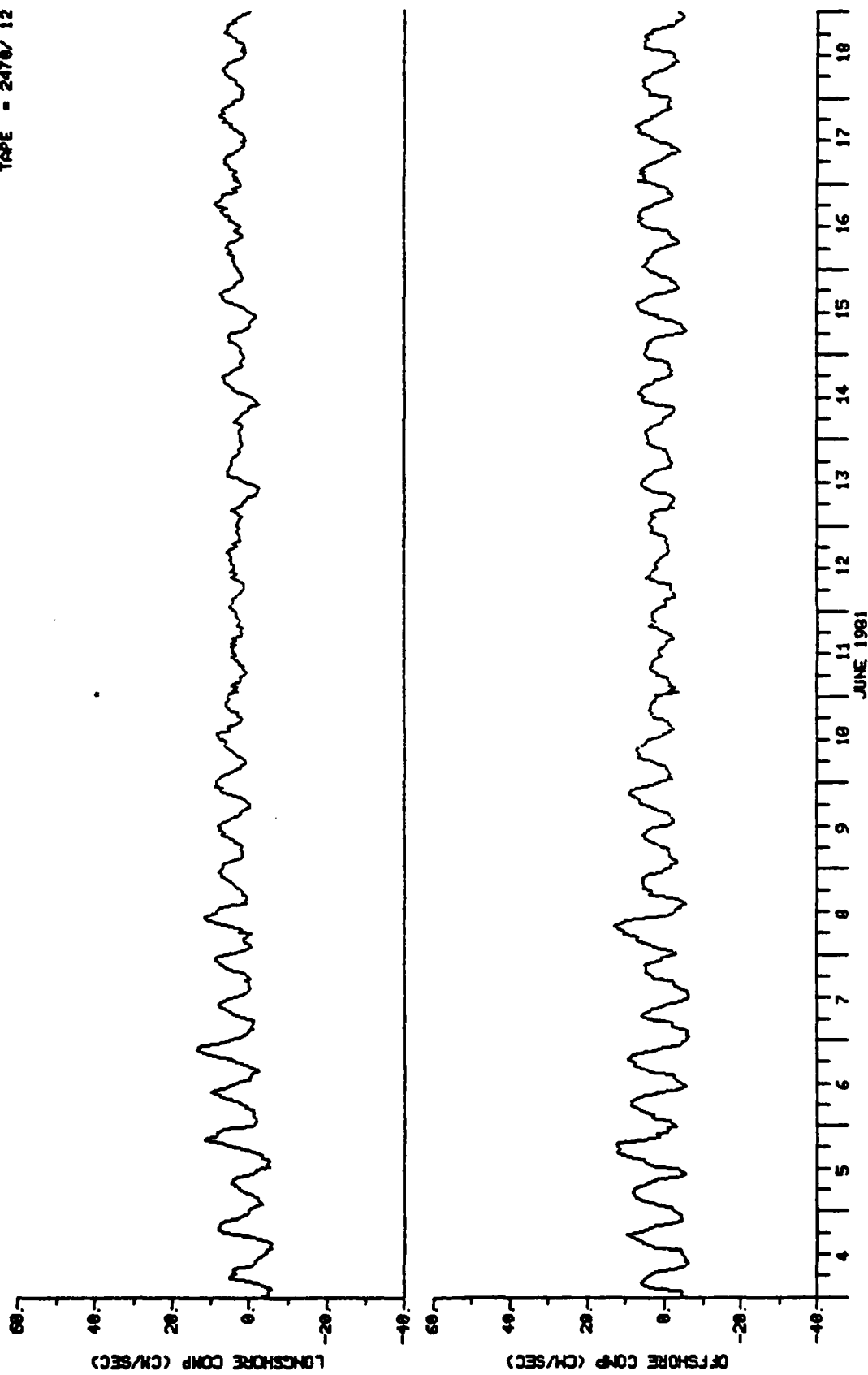
USCG BEAUFORT SEA STUDY

PAGE - 4
STNID - CH-1
DEPTH - 100
TAPE - 2478/ 12



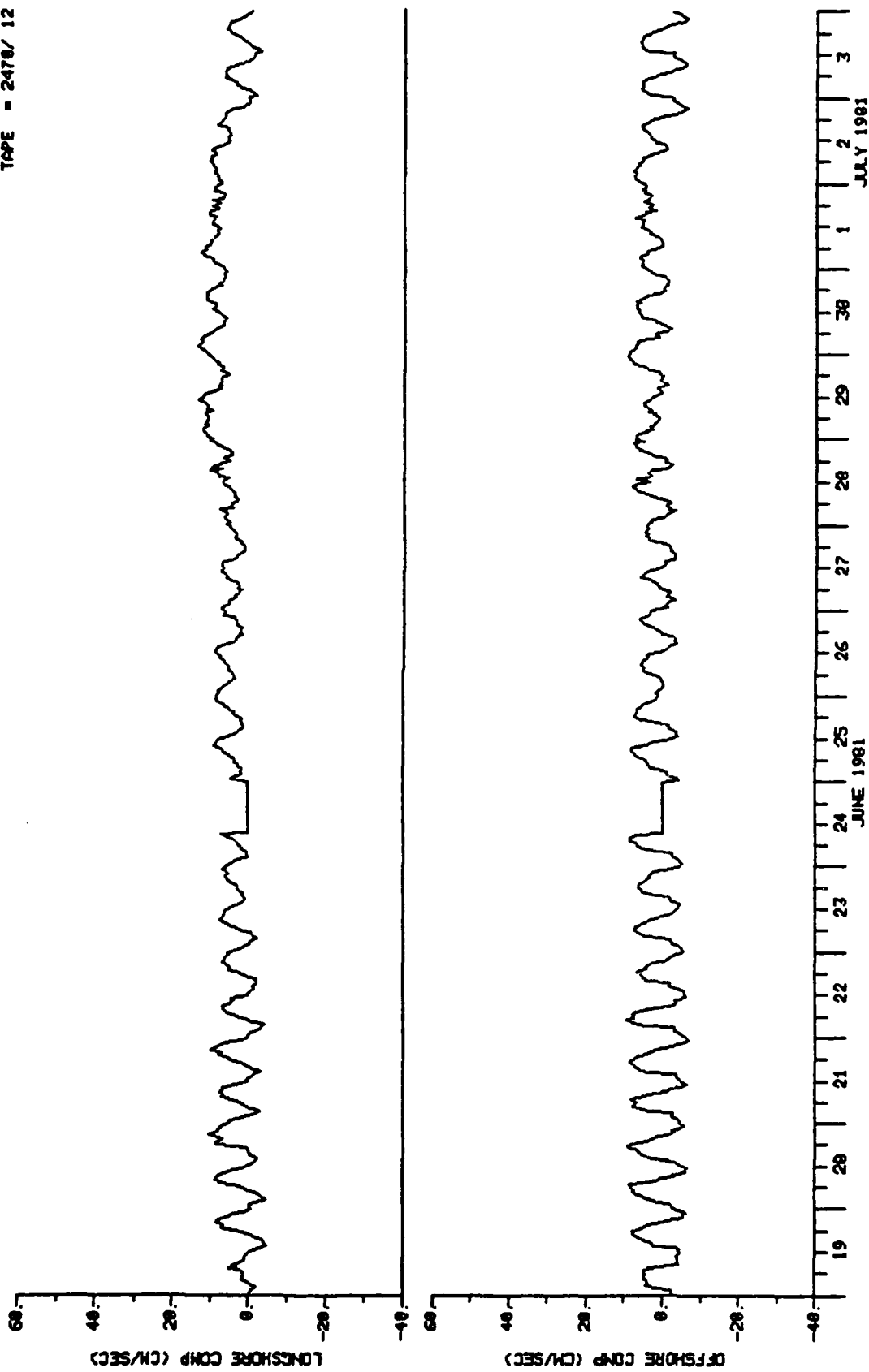
USCG BEAUFORT SEA STUDY

PAGE - 5
STN13 - CH-1
DEPTH - 100
TAPE - 2470/12



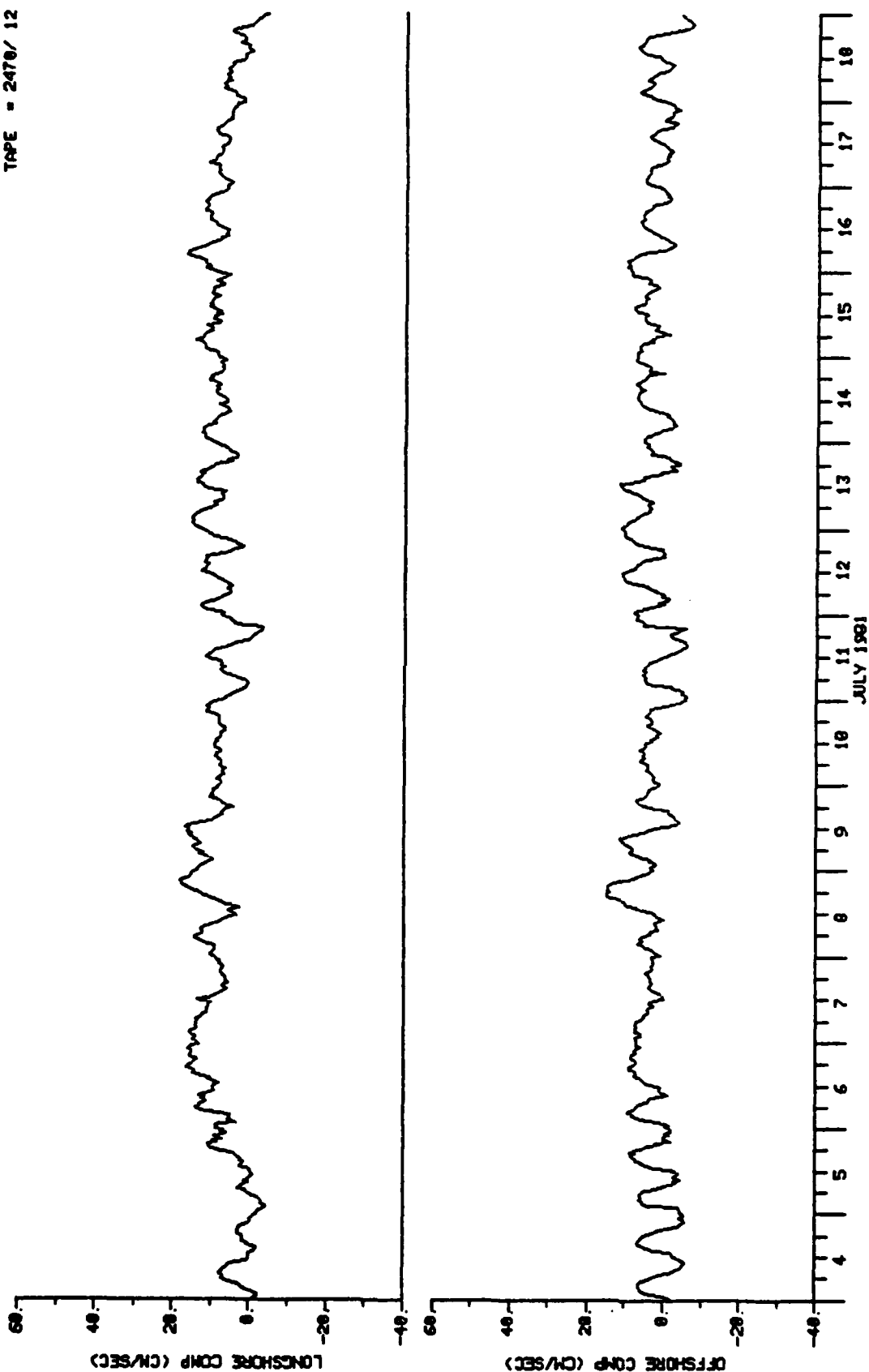
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - CH-1
DEPTH - 100
TAPE - 2470/12



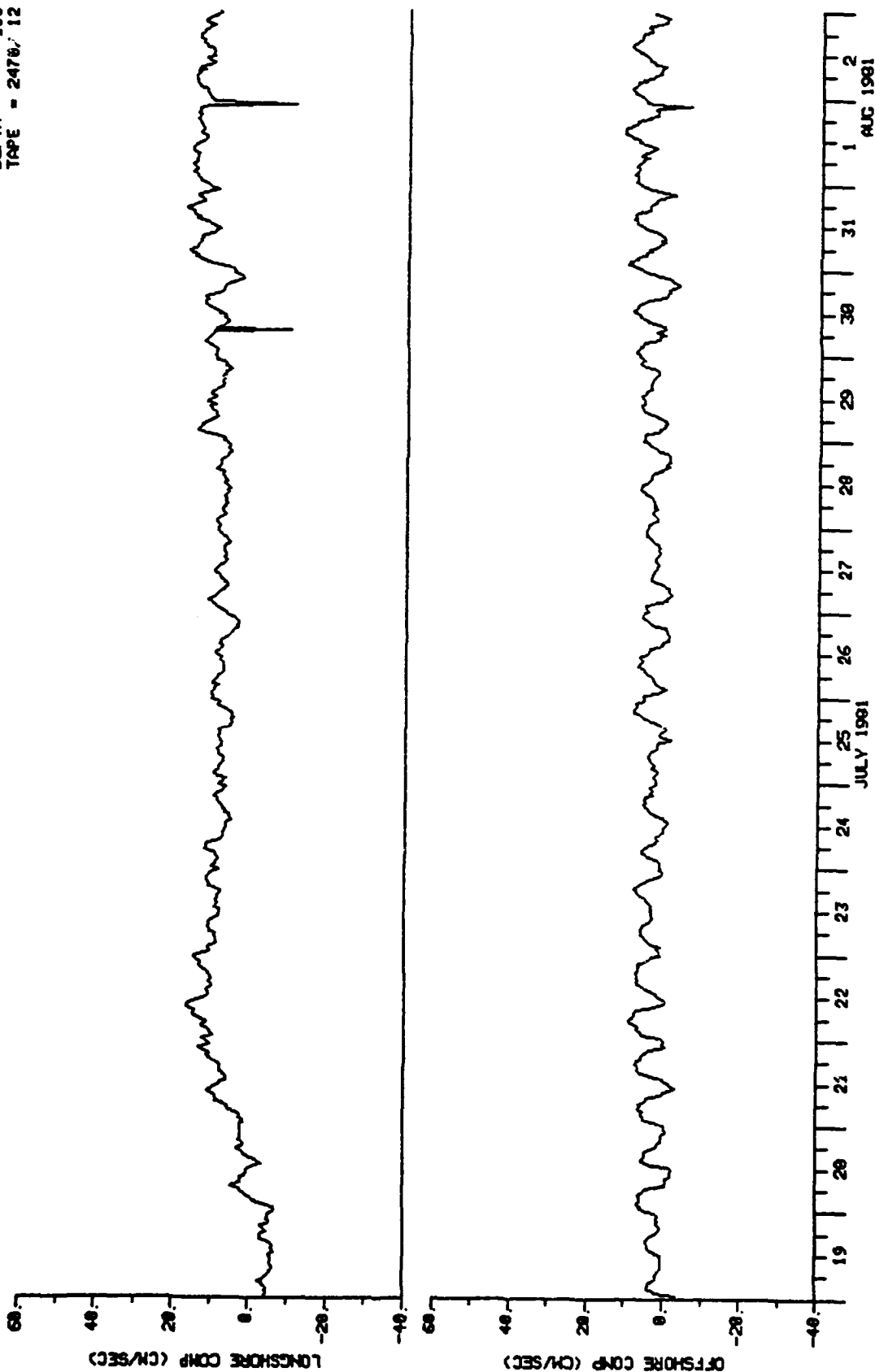
USCG BEAUFORT SEA STUDY

PAGE - 7
STN13 - CH-1
DEPTH - 100
TAPE - 2470/12



USCG BEAUFORT SEA STUDY

PAGE - 8
STNID - CH-1
DEPTH - 100
TAPE - 2478/12



AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

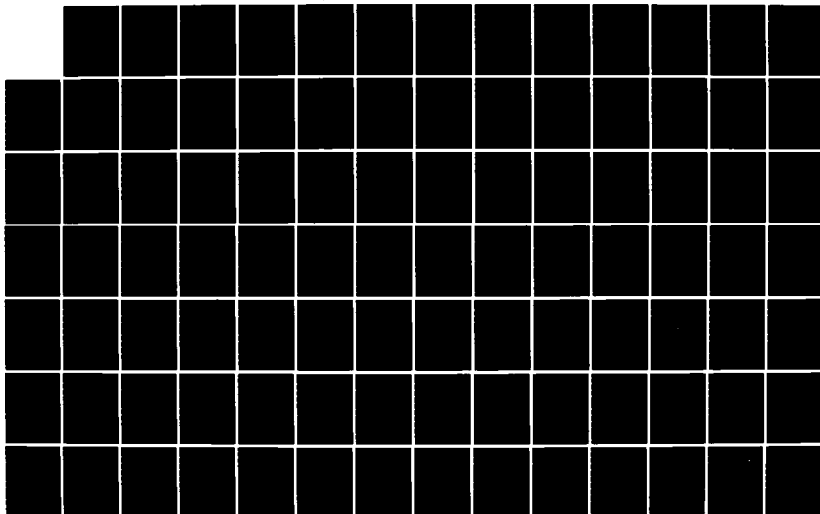
3/6

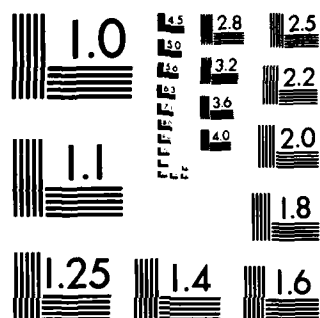
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

NL

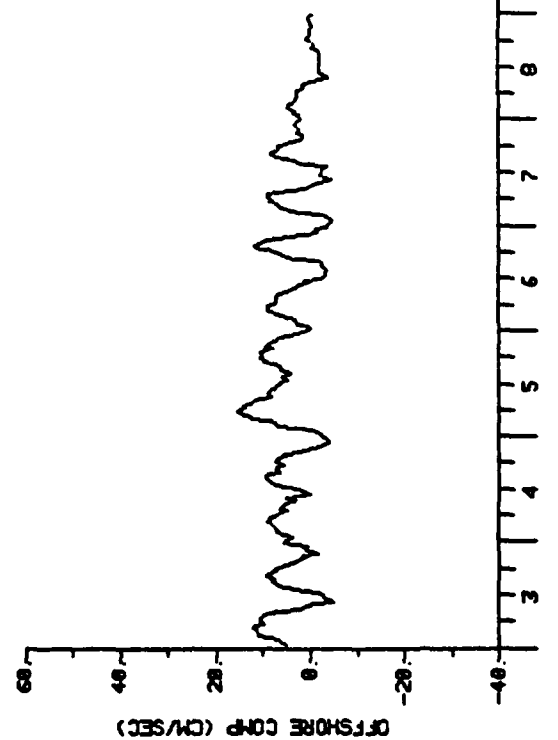
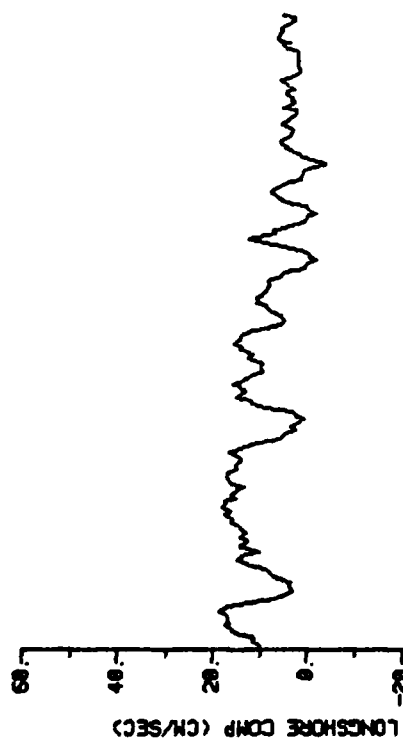




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

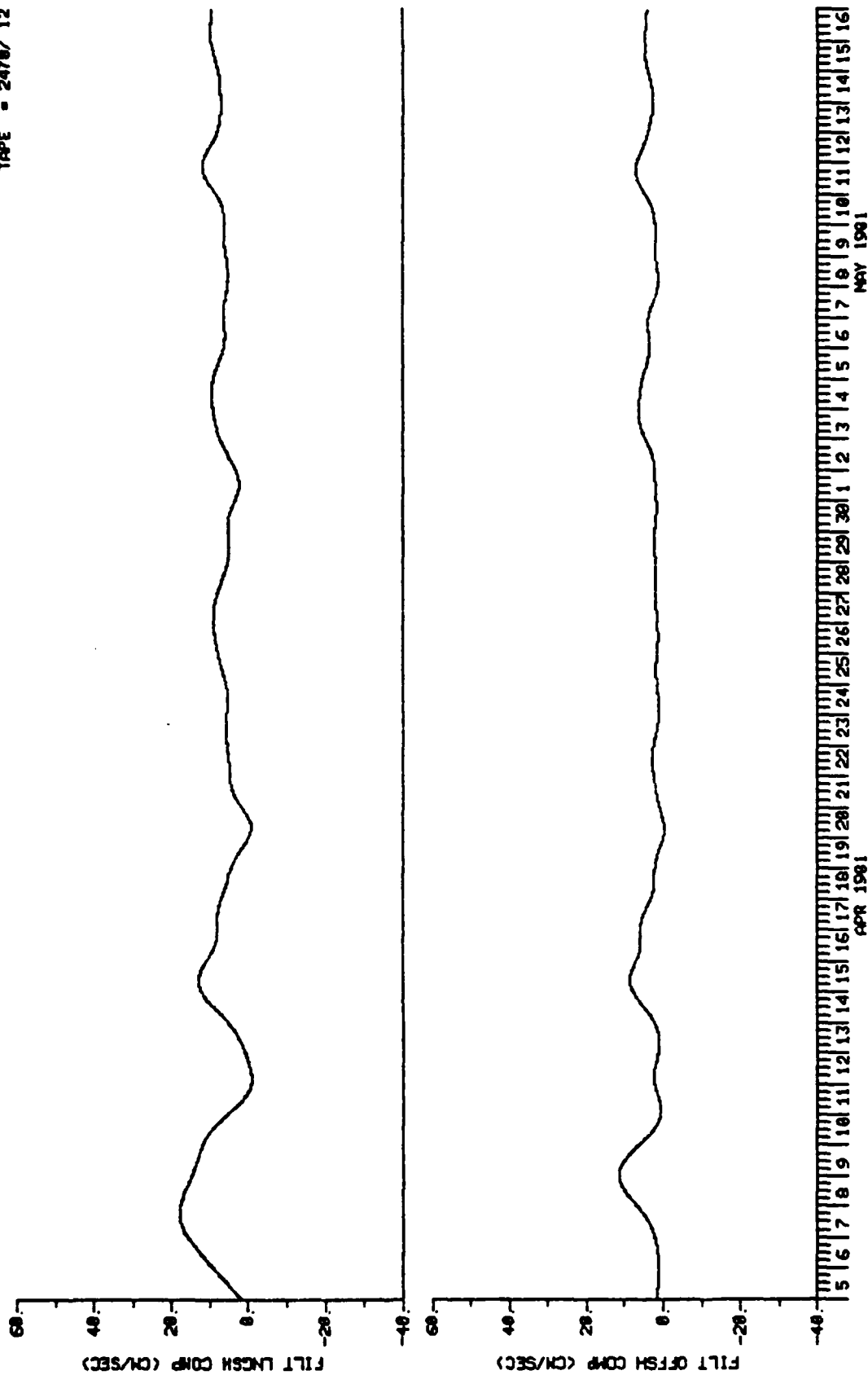
USCG BEAUFORT SEA STUDY

PAGE - 9
STNID - CH-1
DEPTH - 100
TAPE - 2470/12



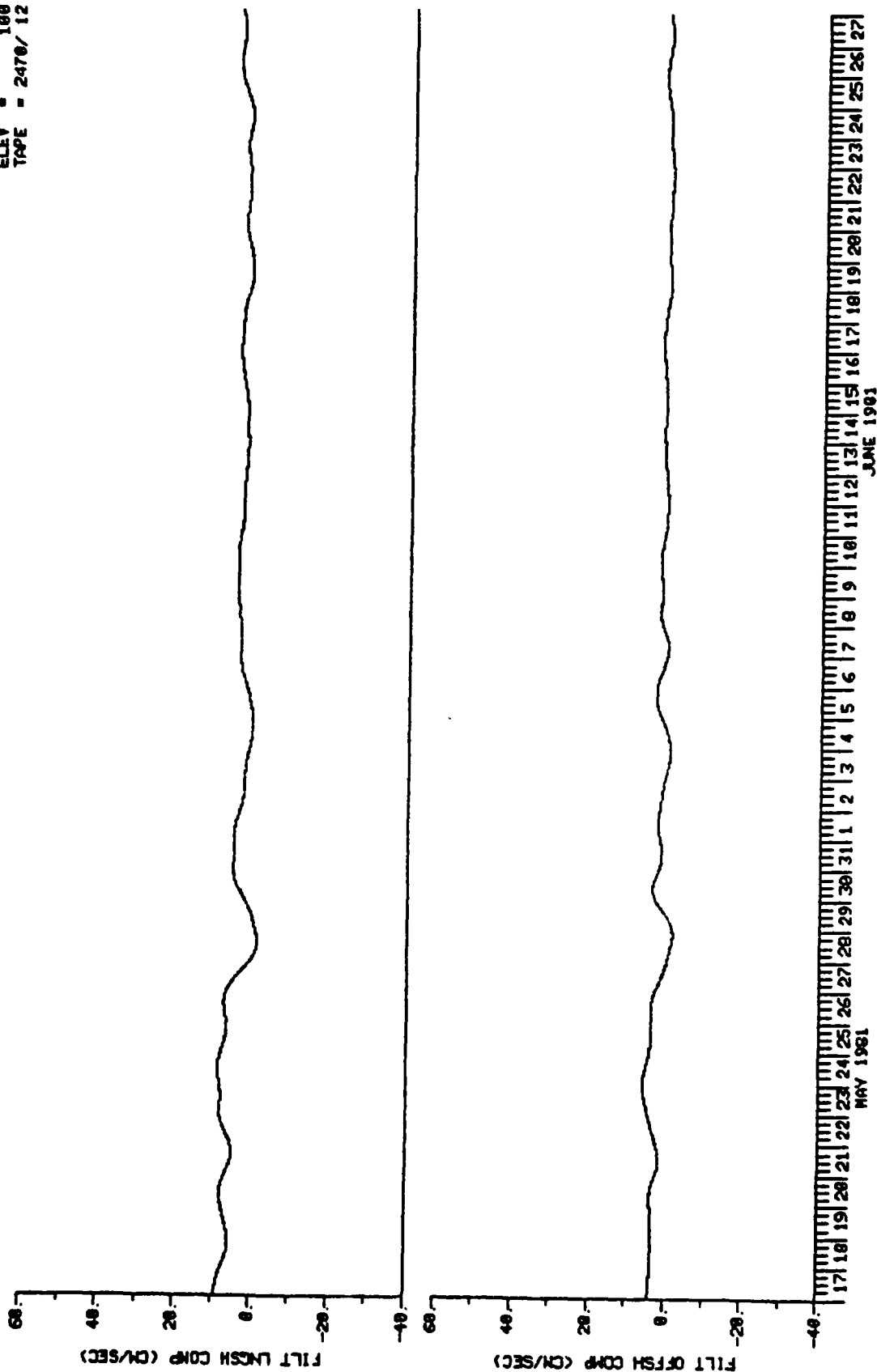
USCG BEAUFORT SEA STUDY

PAGE - 1
 STNID - CH-1
 ELEV - 100
 TAPE - 2470/12



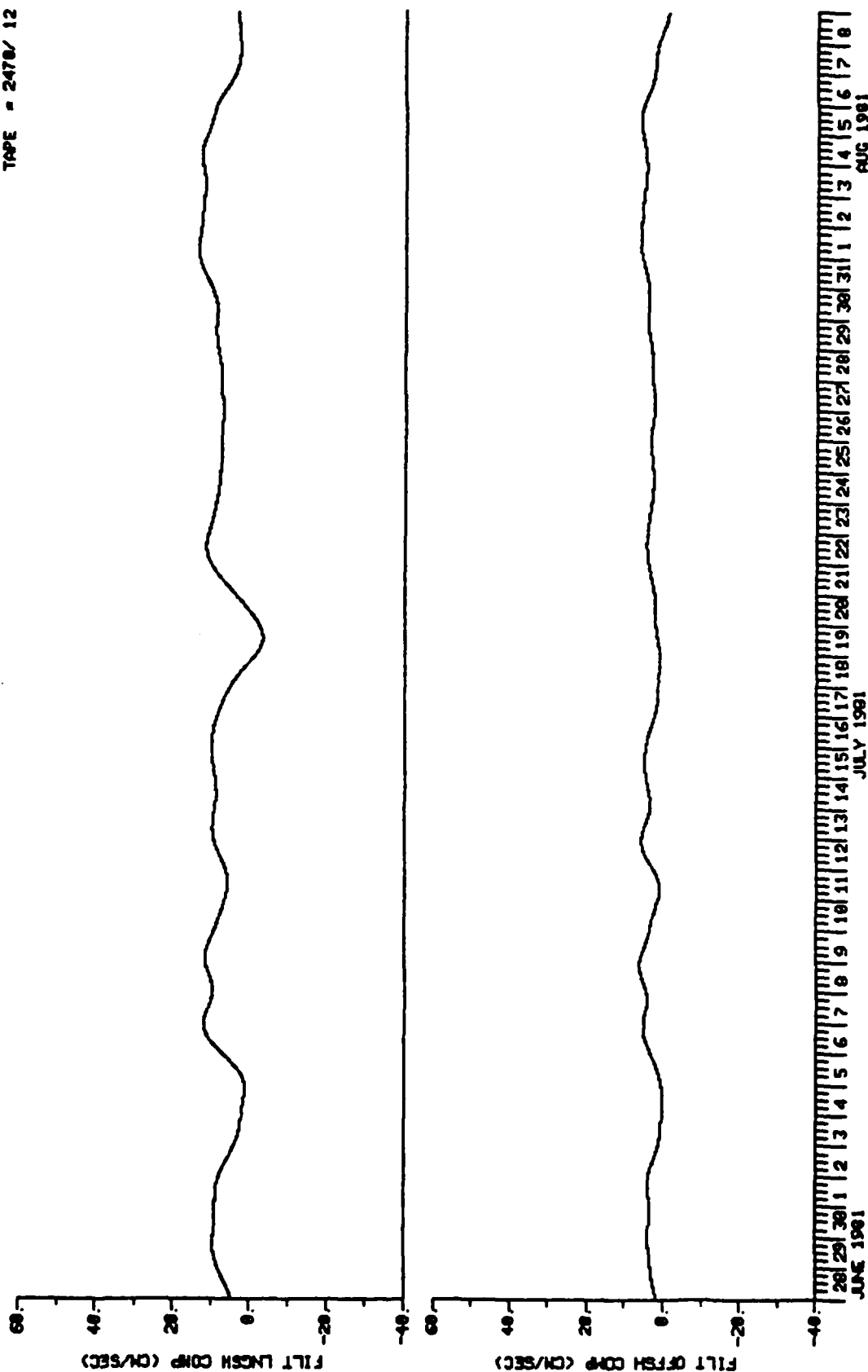
USCG BEAUFORT SEA STUDY

PAGE - 2
 STNID - CH-1
 ELEV - 100
 TAPE - 2470/ 12



USCG BEAUFORT SEA STUDY

PAGE = 3
 STN13 = CH-1
 ELEV = 100
 TAPE = 2478/ 12



CM21

39 m depth

70° 56.5' N 132° 09.0' W

5 April 1981 to 9 August 1981

Longshore direction is 65° T

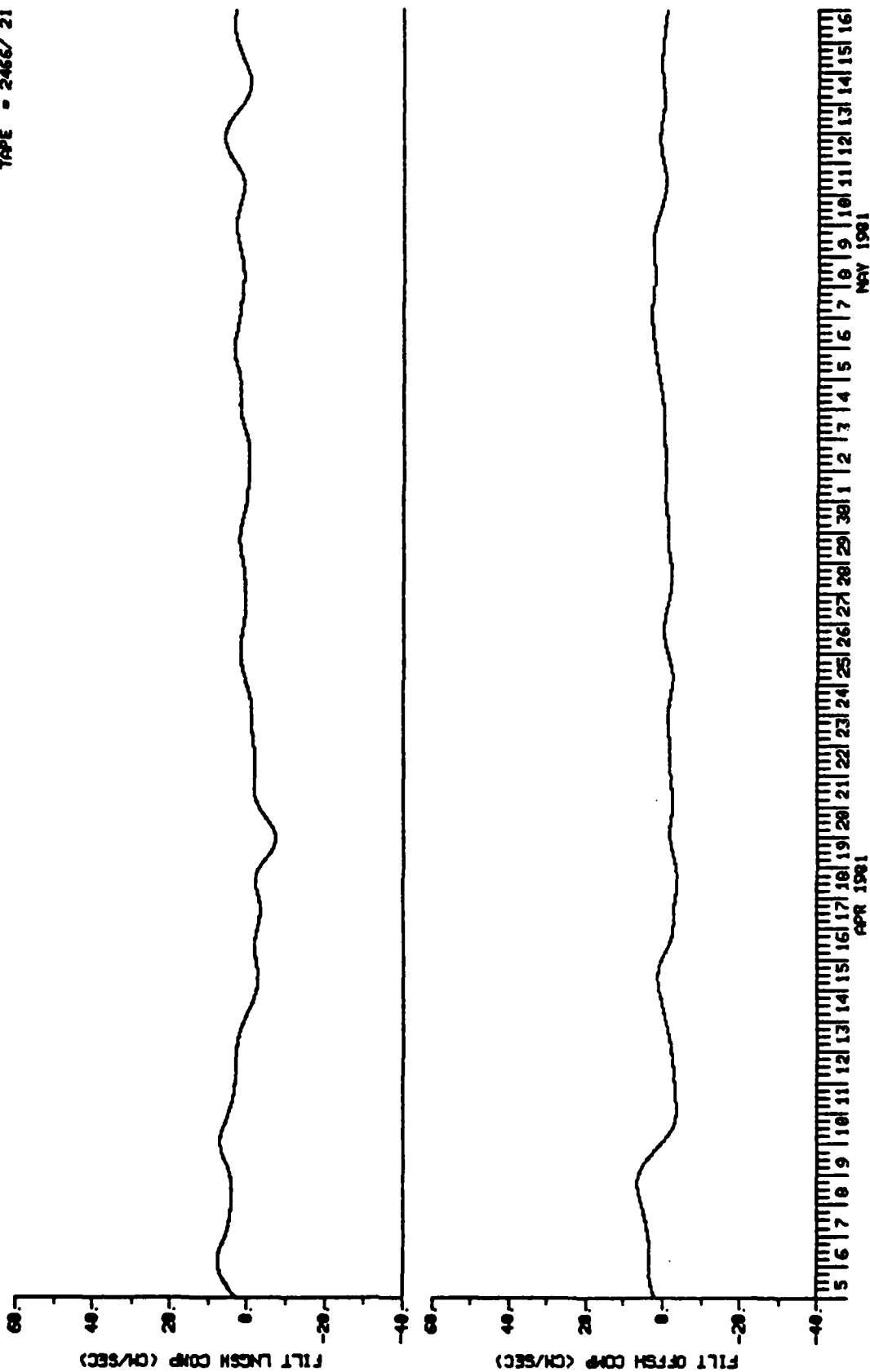
Offshore direction is 335° T

Filter is 25 hour low pass

$A_{24}^2 A_{25}$ (Godin, 1972)

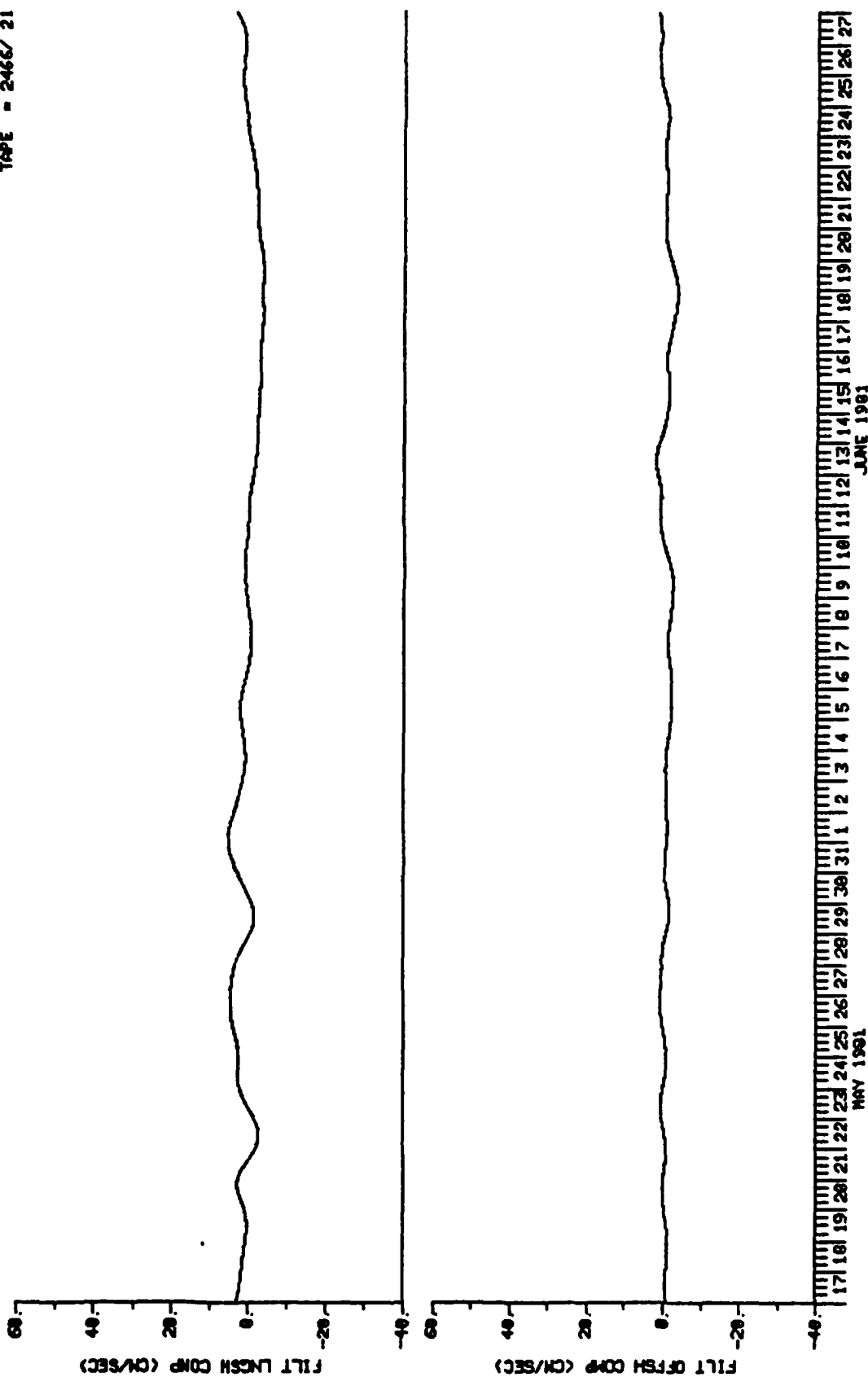
USCG BEAUFORT SEA STUDY

PAGE - 1
 STNID - CH-2 42
 ELEV - 2466/ 21
 TAPE - 2466/ 21



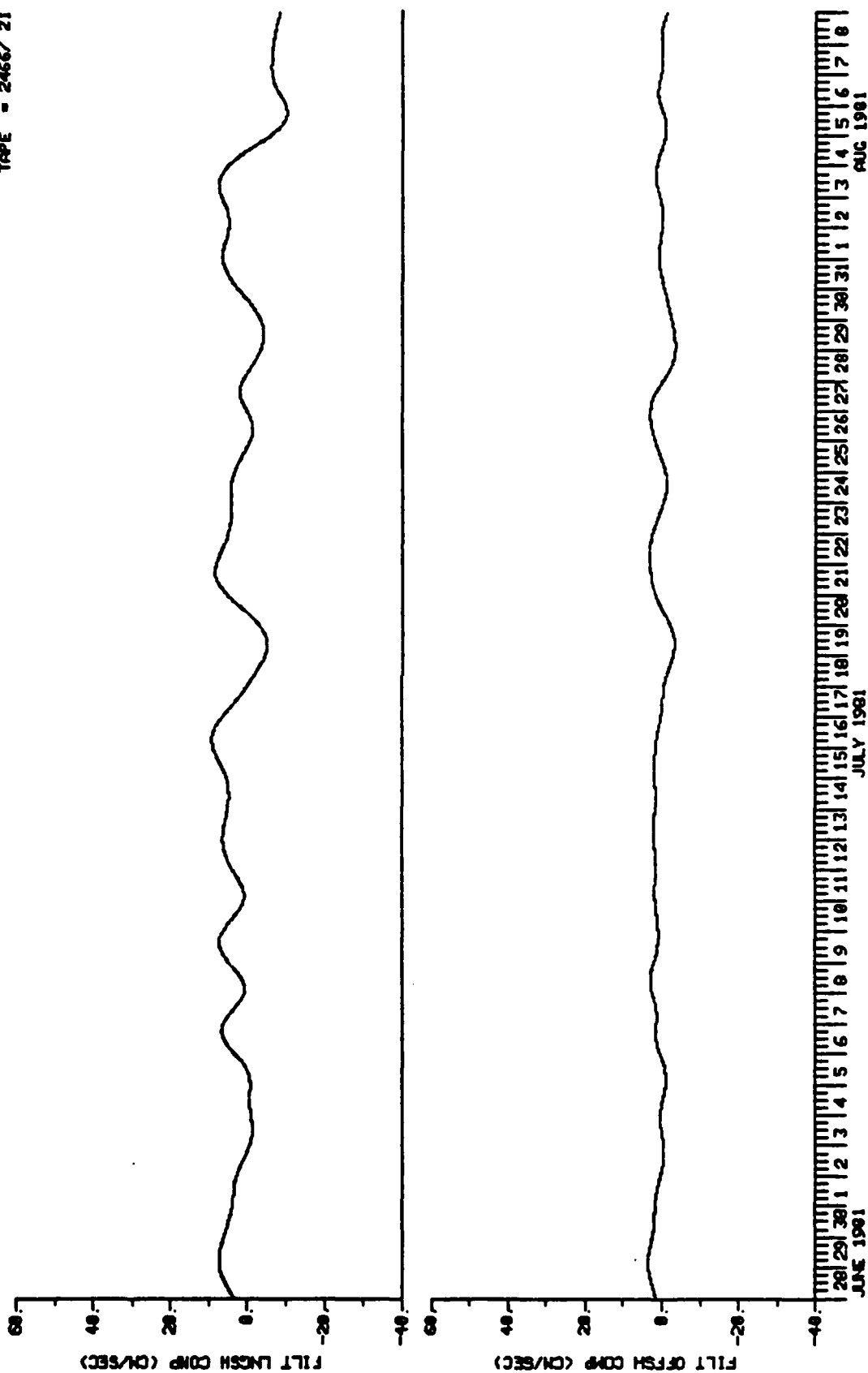
USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - CH-2
 ELEV - 42
 TAPE - 2466/ 21



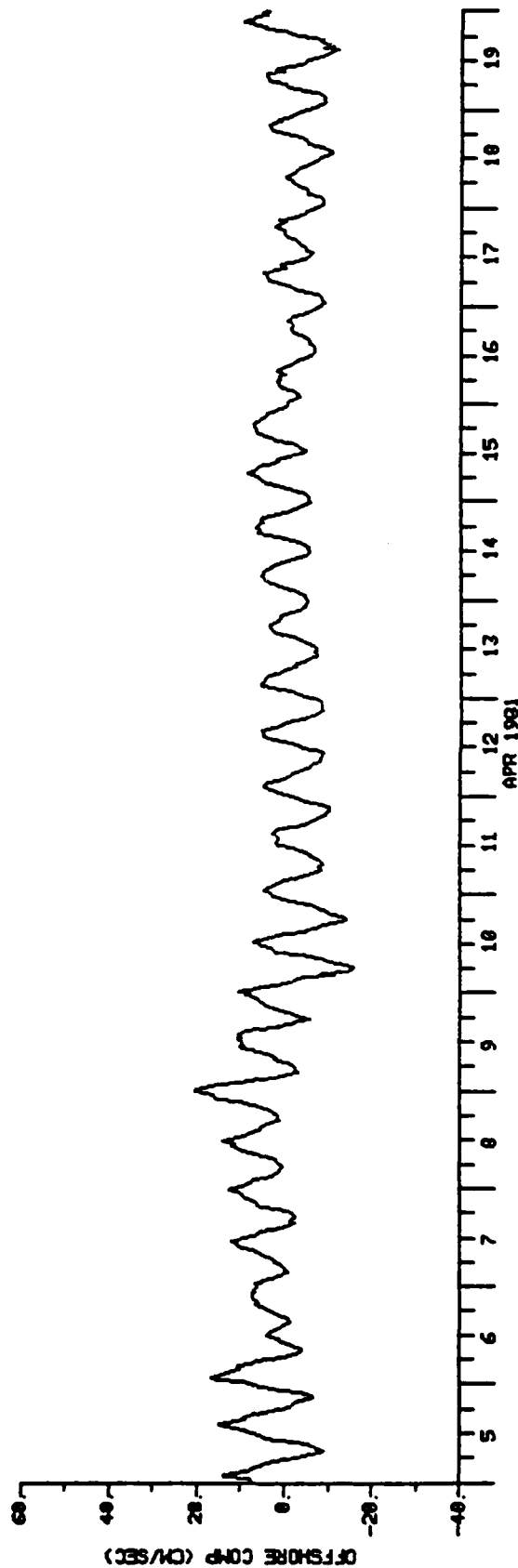
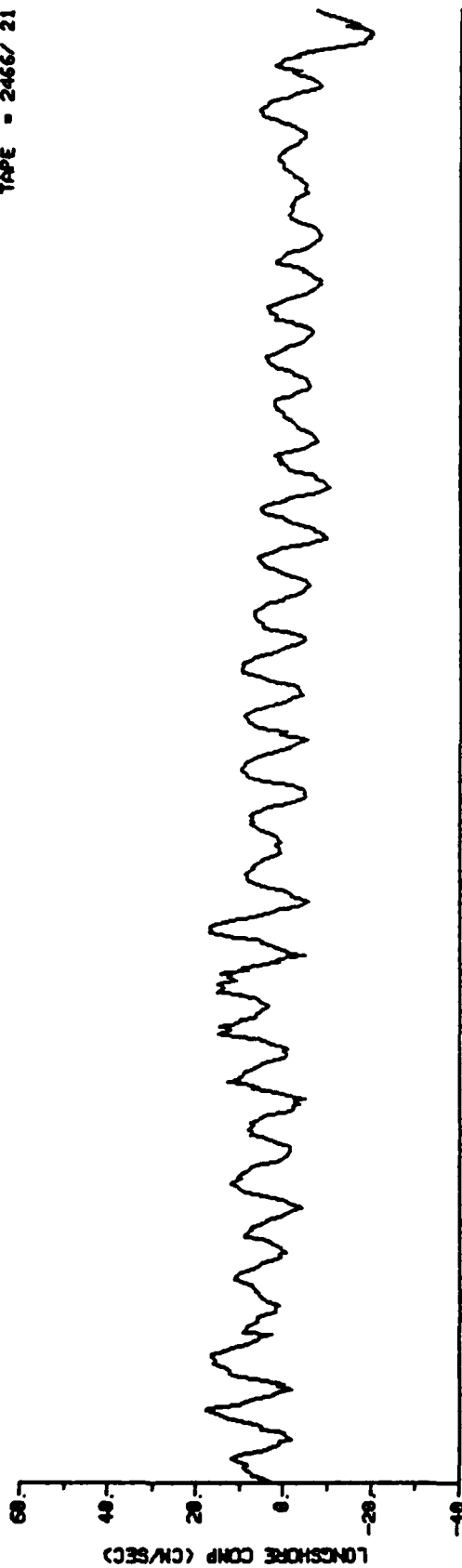
USCG BEAUFORT SEA STUDY

PAGE - 3
 STN13 - CH-2
 ELEV - 42
 TAPE - 2466/ 21



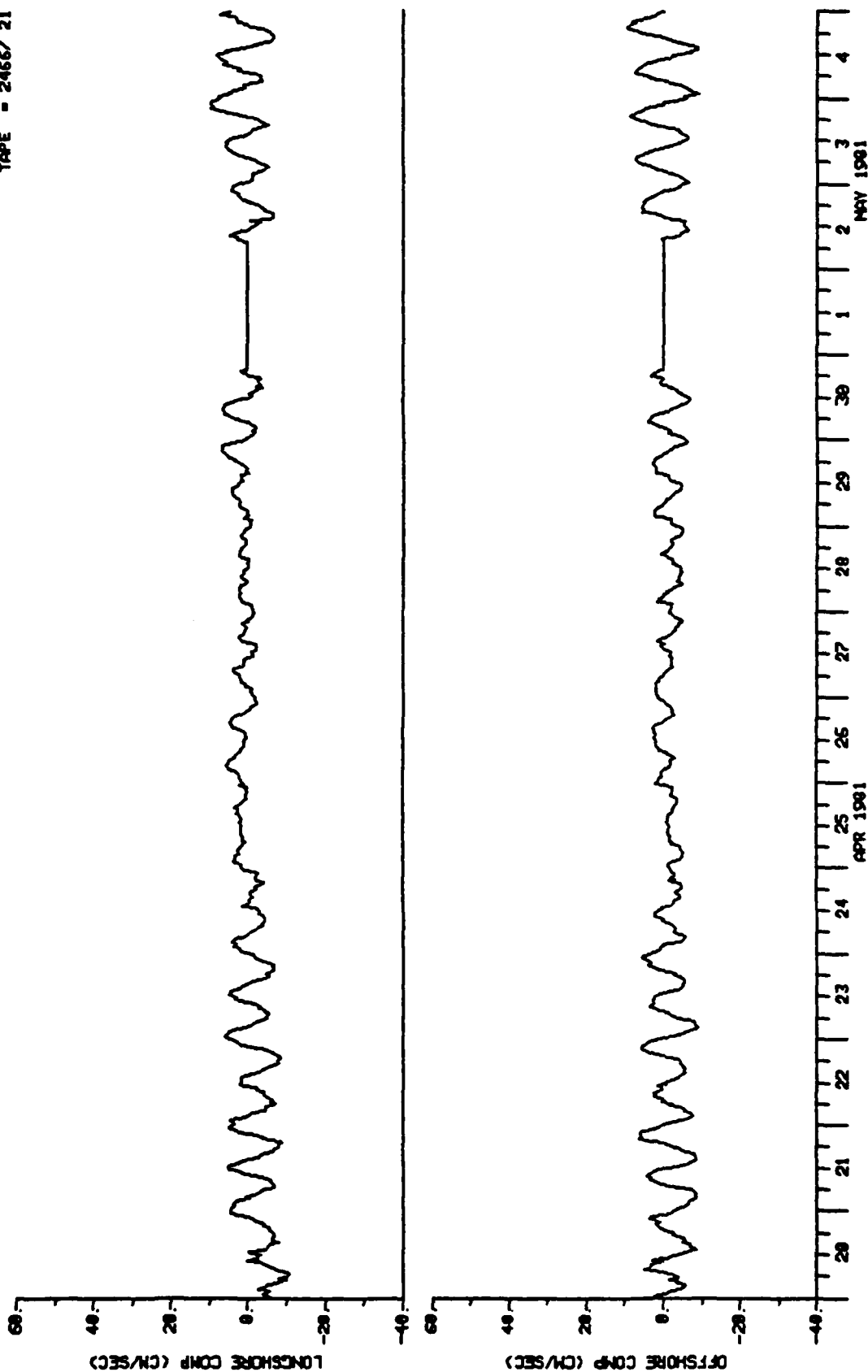
USCG BEAUFORT SEA STUDY

PAGE - 1
STN13 - C-2
DEPTH - 42
TAPE - 2466/ 21



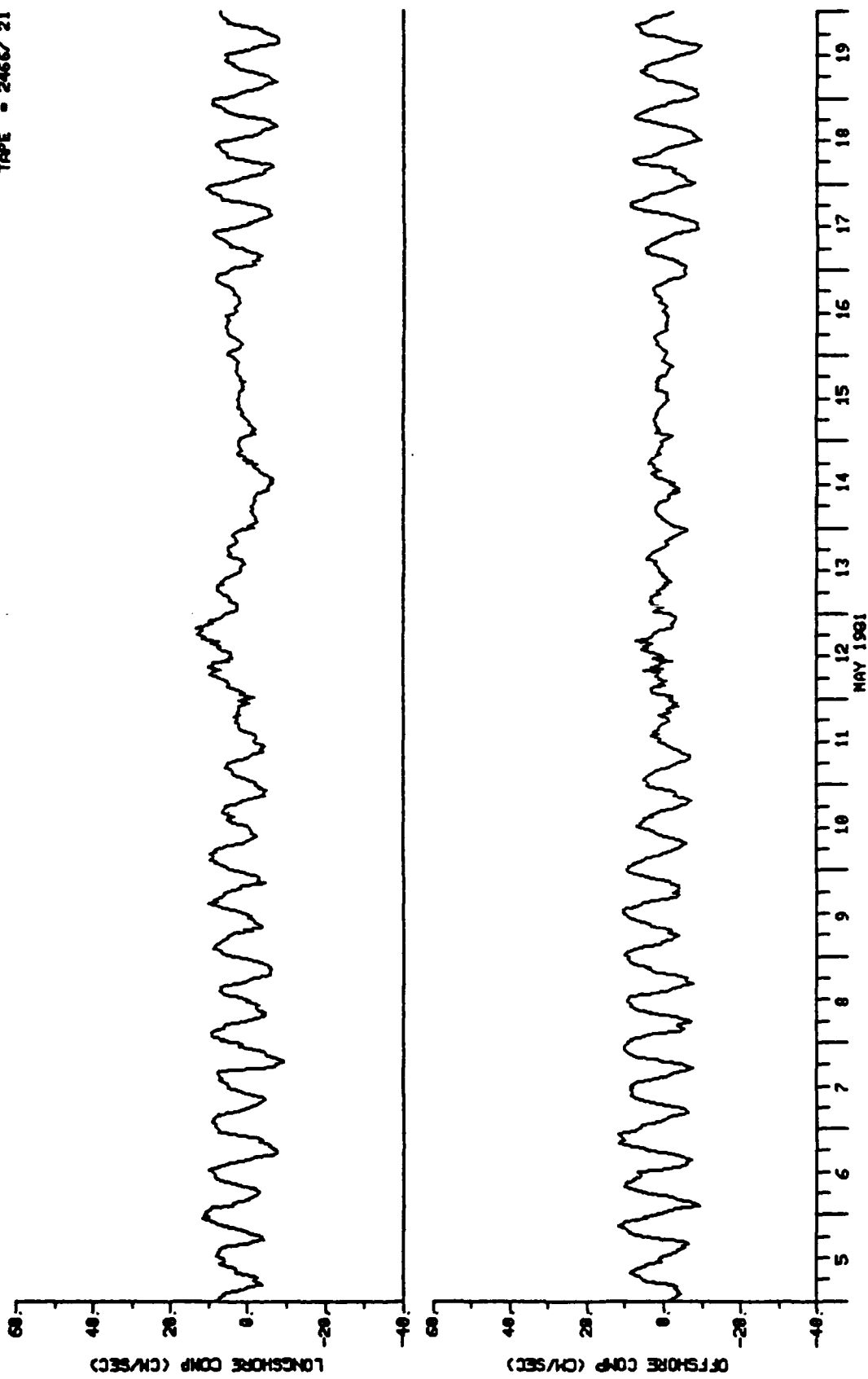
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CH-2
DEPTH - 42
TAPE - 2466/ 21



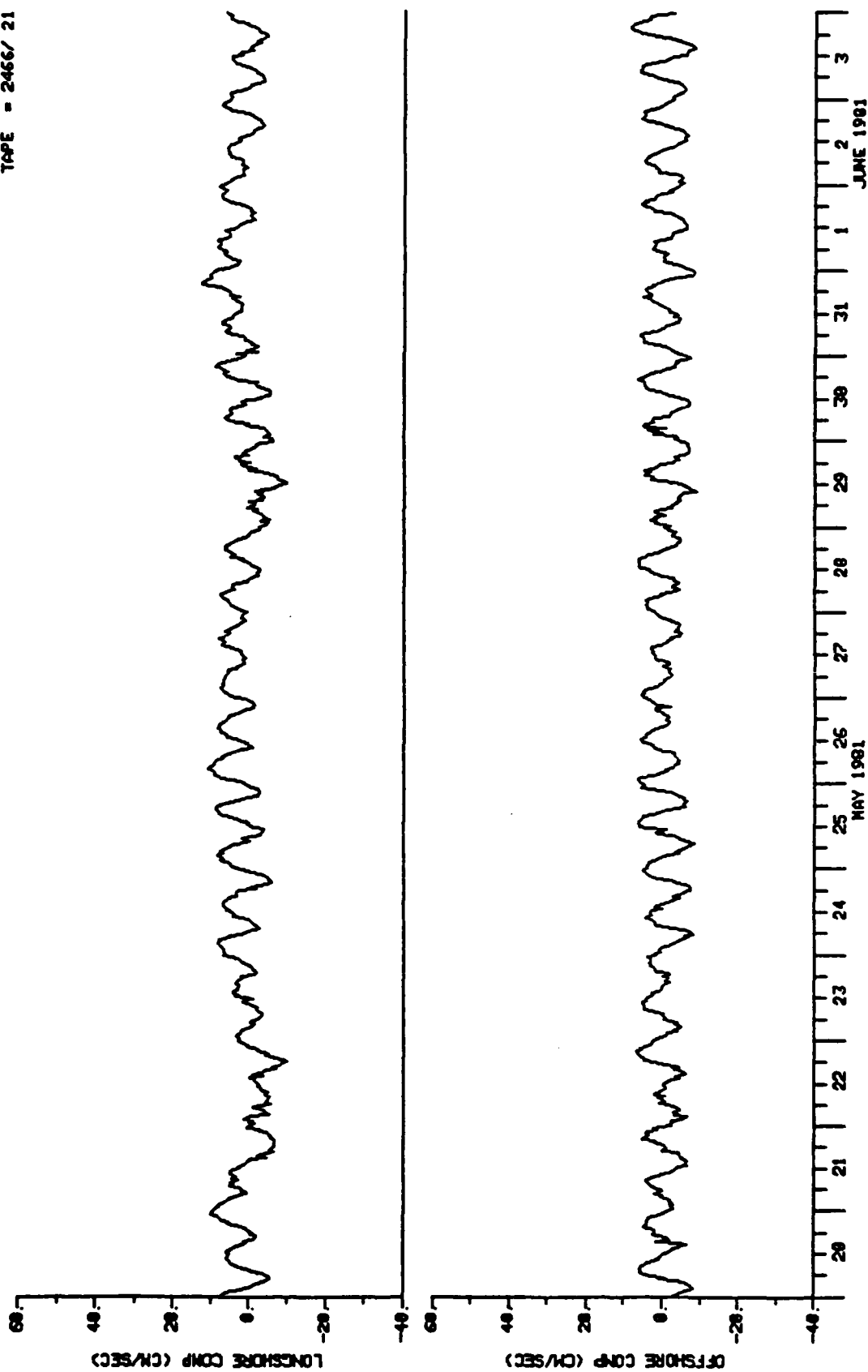
USCG BEAUFORT SEA STUDY

PAGE = 3
STN13 = CH-2
DEPTH = 42
TAPE = 2466/ 21



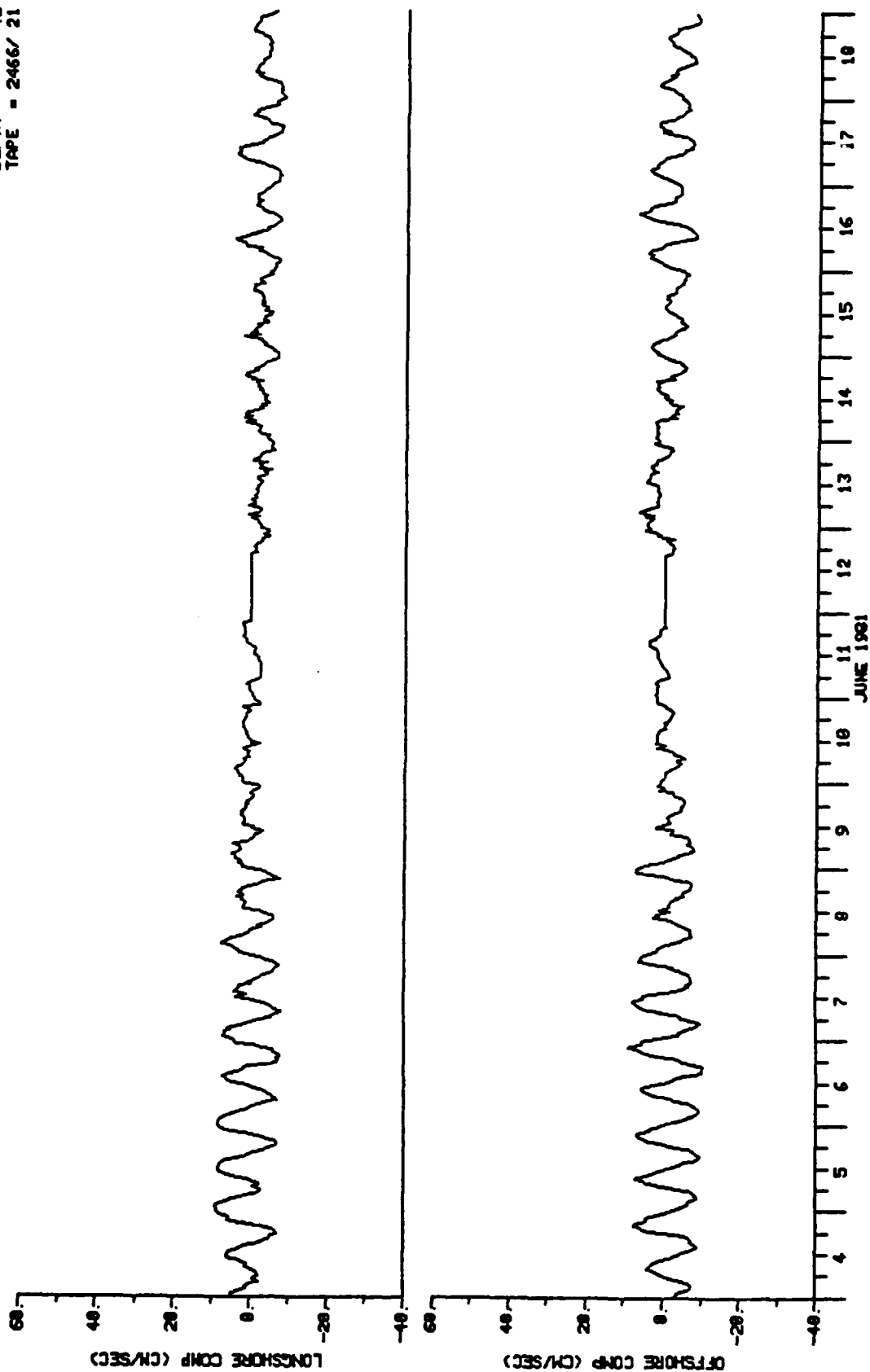
USCG BEAUFORT SEA STUDY

PAGE - 4
STNID - C4-2
DEPTH - 42
TAPE - 2456/ 21



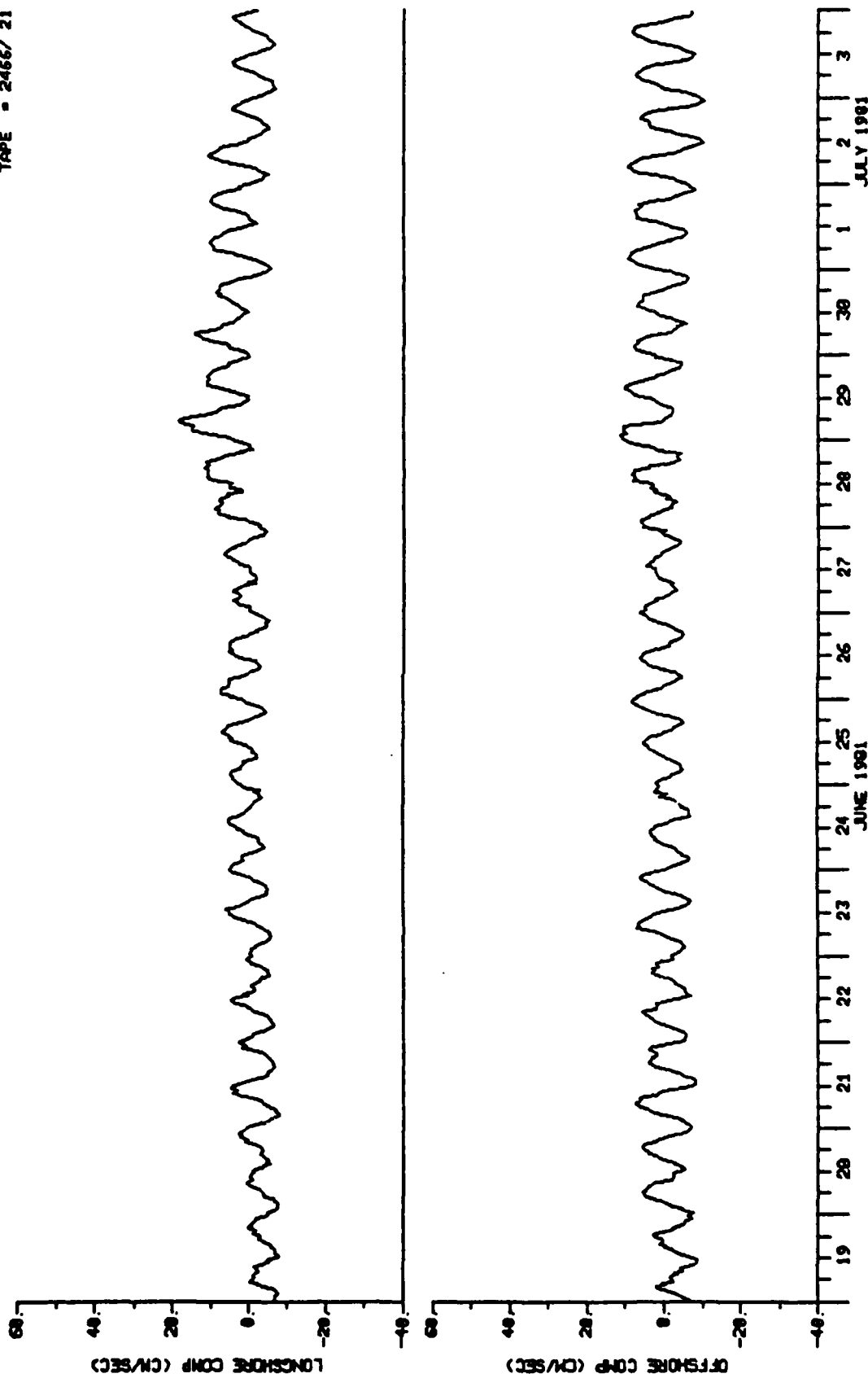
USCG BEAUFORT SEA STUDY

PAGE - 5
STNID - CH-2
DEPTH - 42
TAPE - 2466/ 21



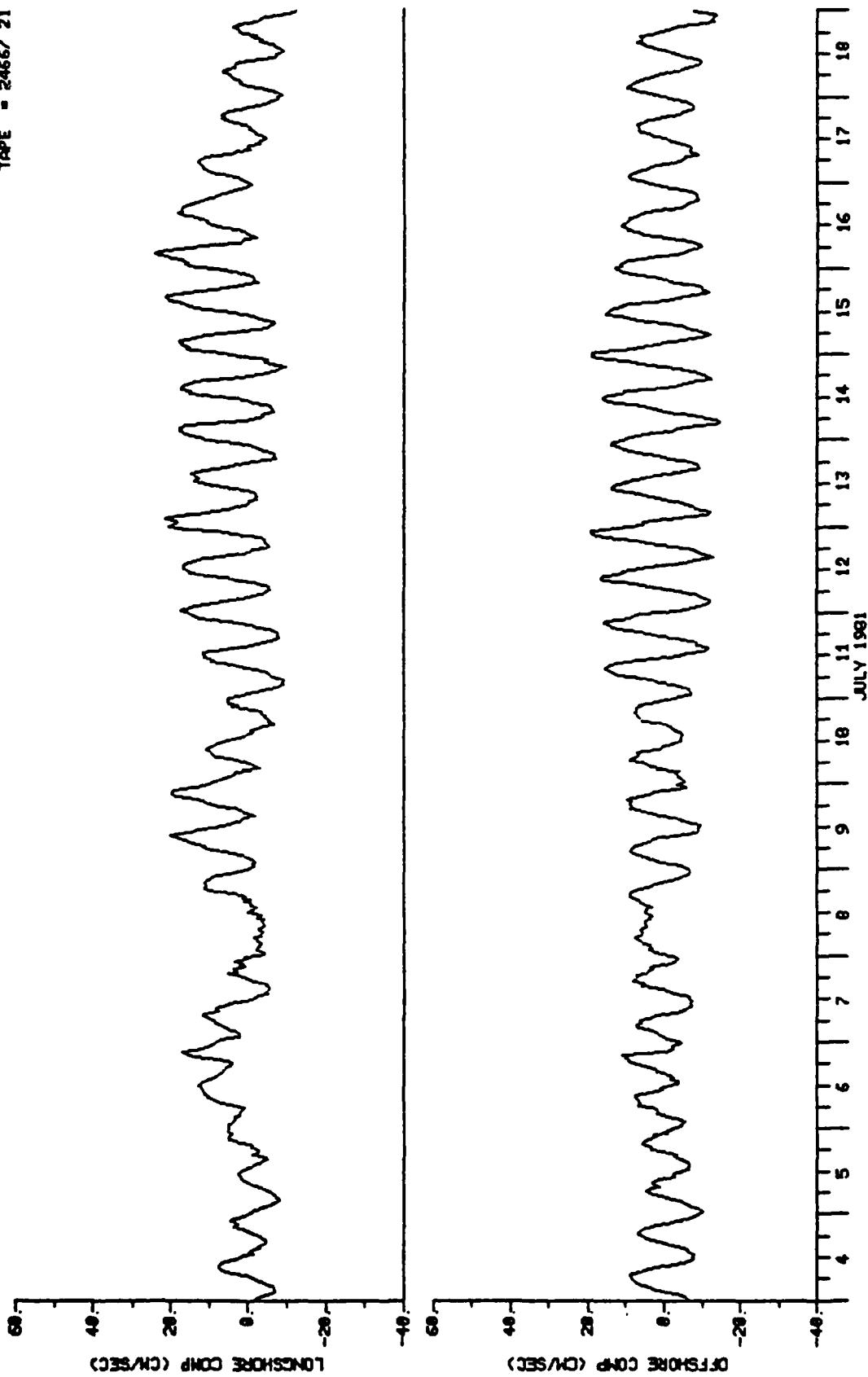
USCG BEAUFORT SEA STUDY

PAGE - 6
STN13 - CH-2
DEPTH - 42
TAPE - 2466/ 21



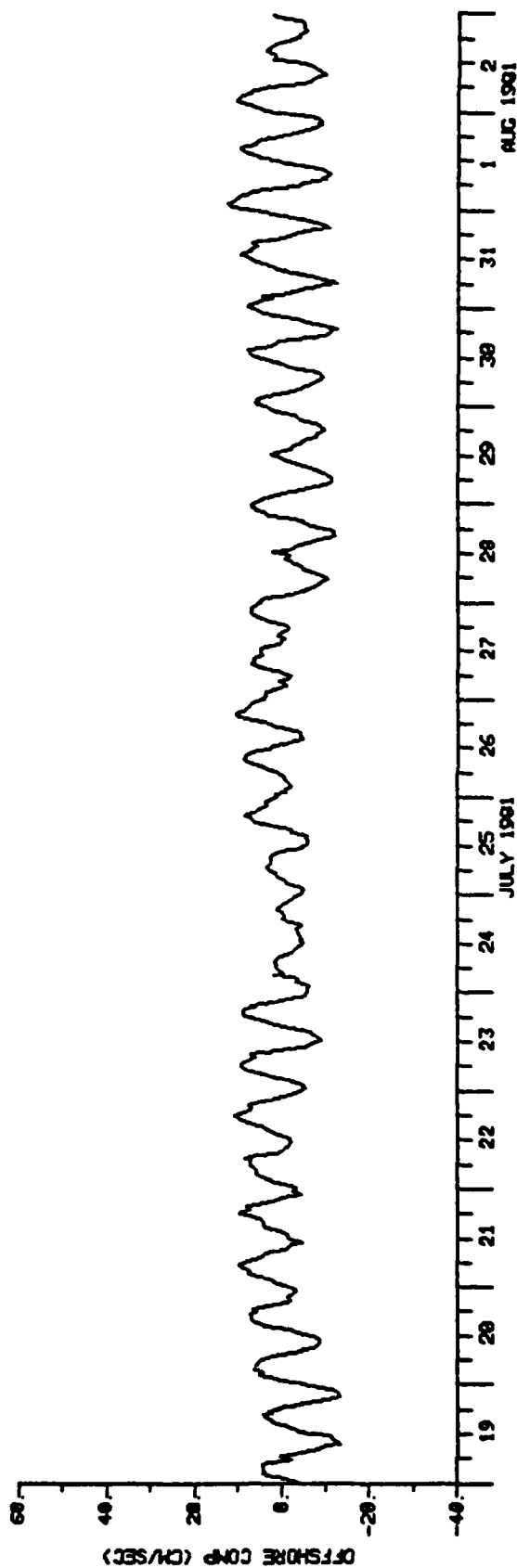
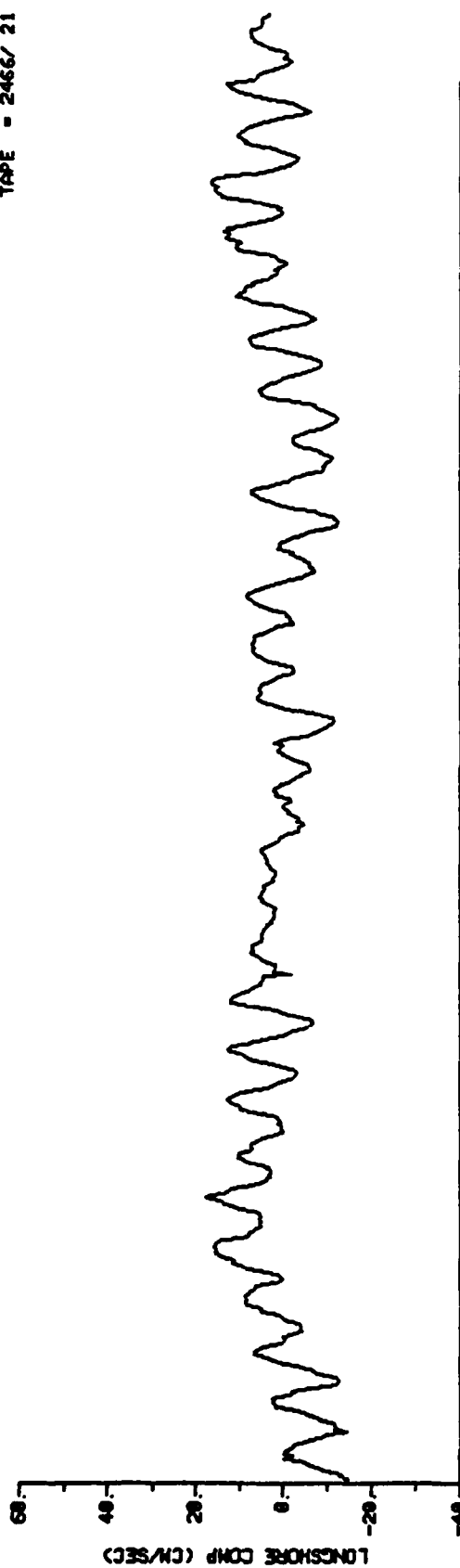
USCG BEAUFORT SEA STUDY

PAGE = 7
STNID = CH-2
DEPTH = 42
TAPE = 2466/ 21



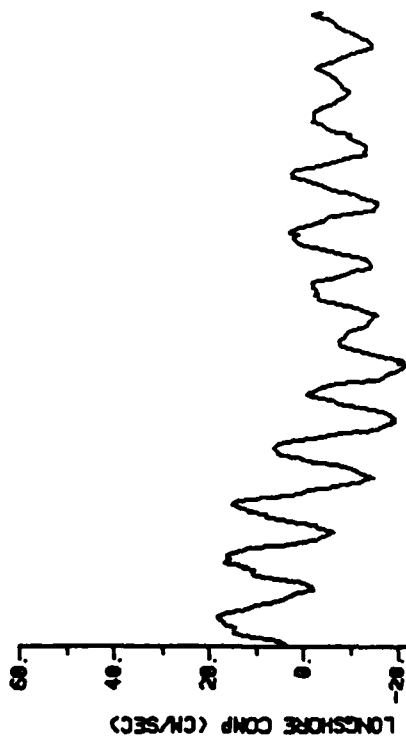
USCG BEAUFORT SEA STUDY

PAGE - 8
STNID - CM-2
DEPTH - 42
TAPE - 2466/ 21



USCG BEAUFORT SEA STUDY

PAGE - 9
STN13 - CH-2
DEPTH - 42
TAPE - 2466/ 21



AUG 1981

CM22

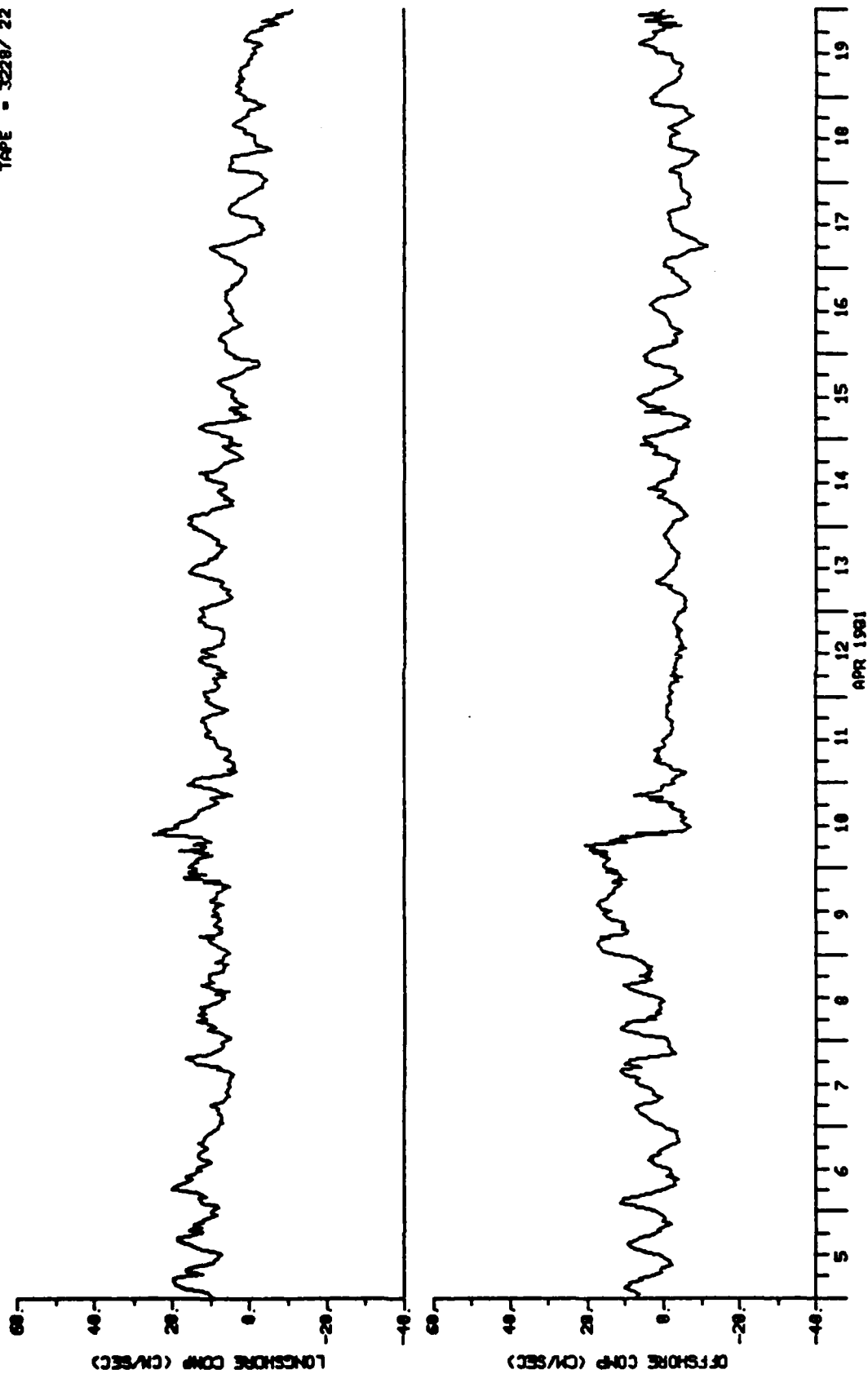
72 m depth
70° 56.5' N 133° 33.0' W
5 April 1981 to 9 August 1981
Longshore direction is 65° T
Offshore direction is 335° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

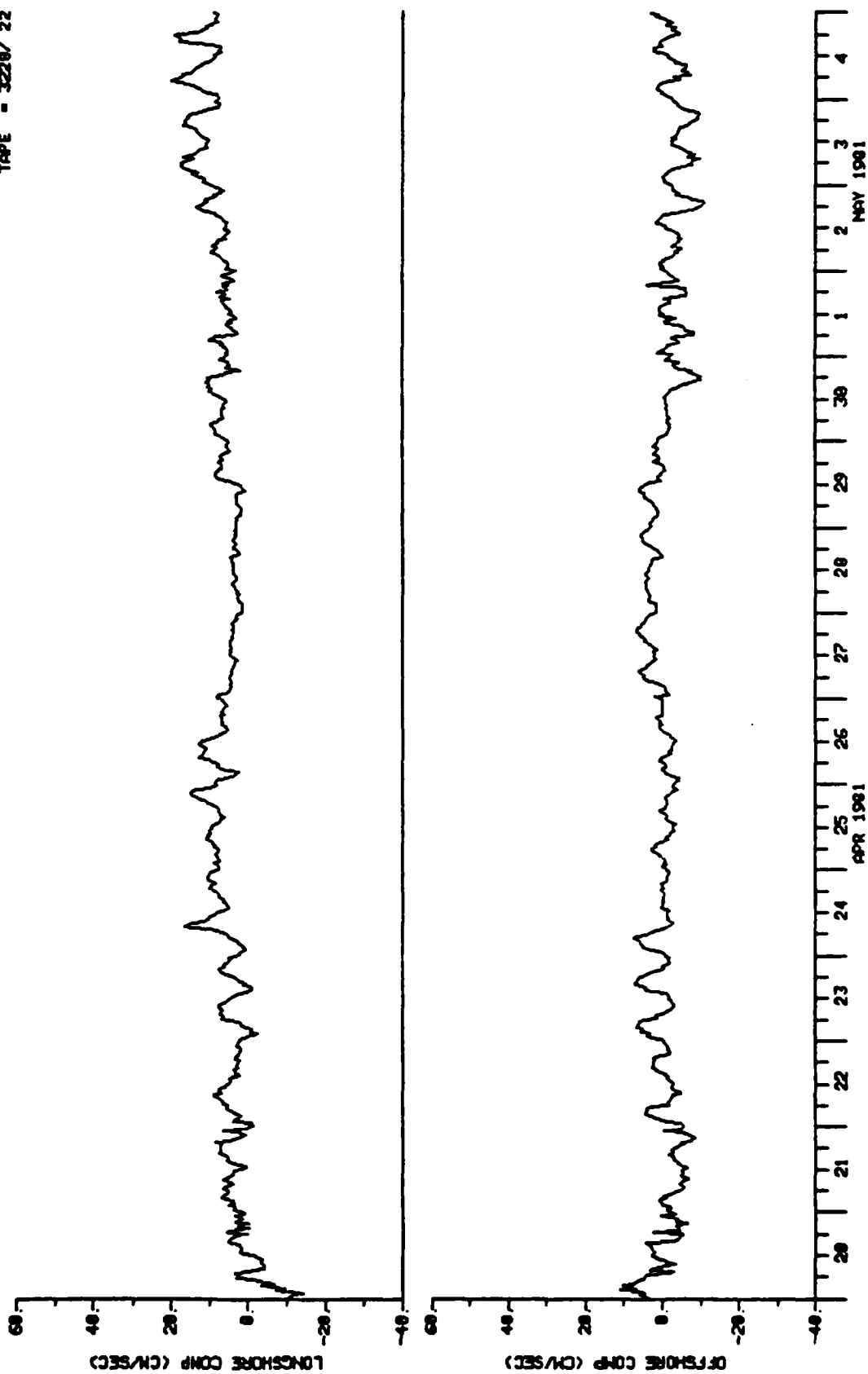
USCG BEAUFORT SEA STUDY

PAGE - 1
STNID - C1-2
DEPTH - 100
TAPE - 3228/ 22



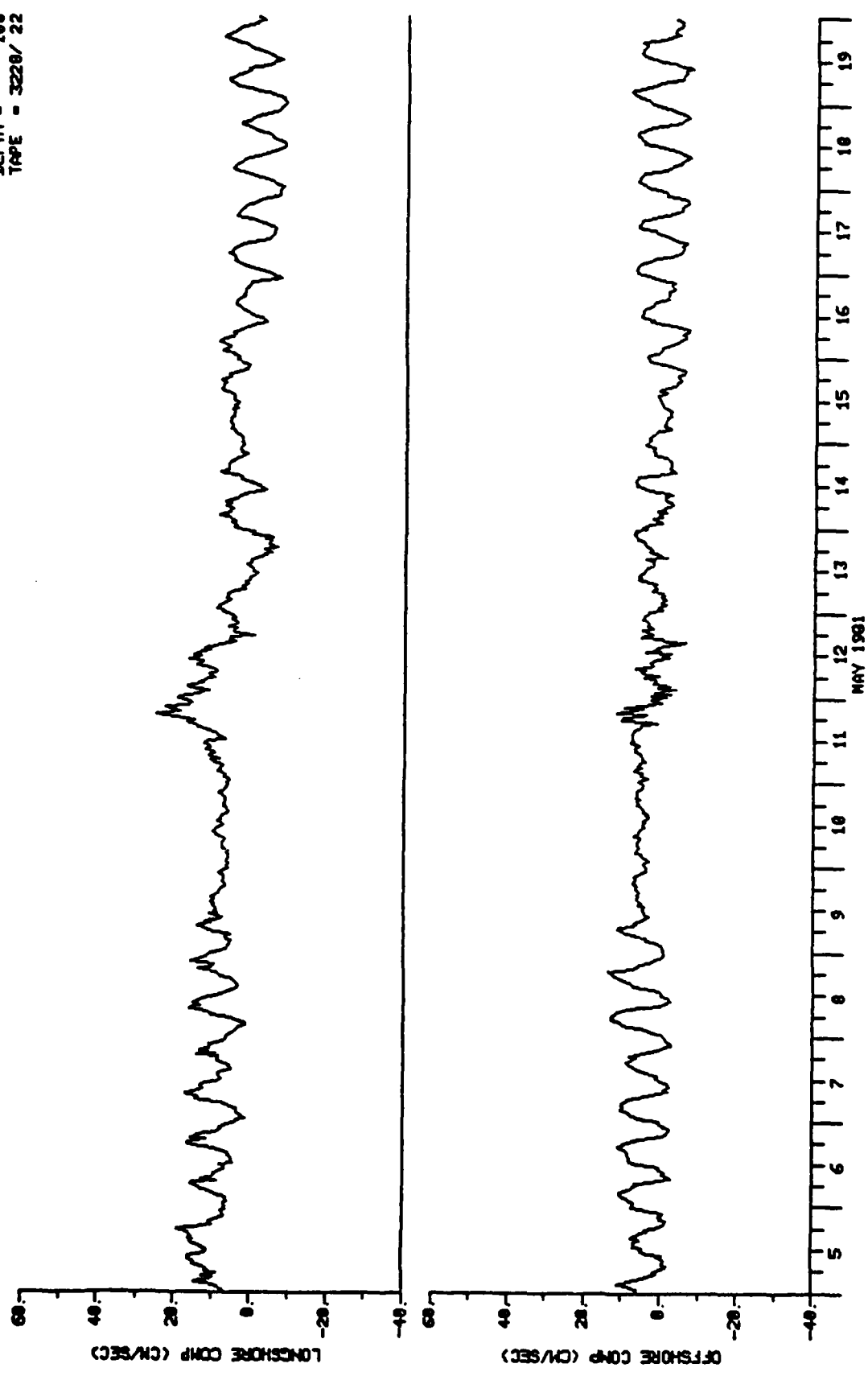
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CH-2
DEPTH - 100
TAPE - 3228/ 22



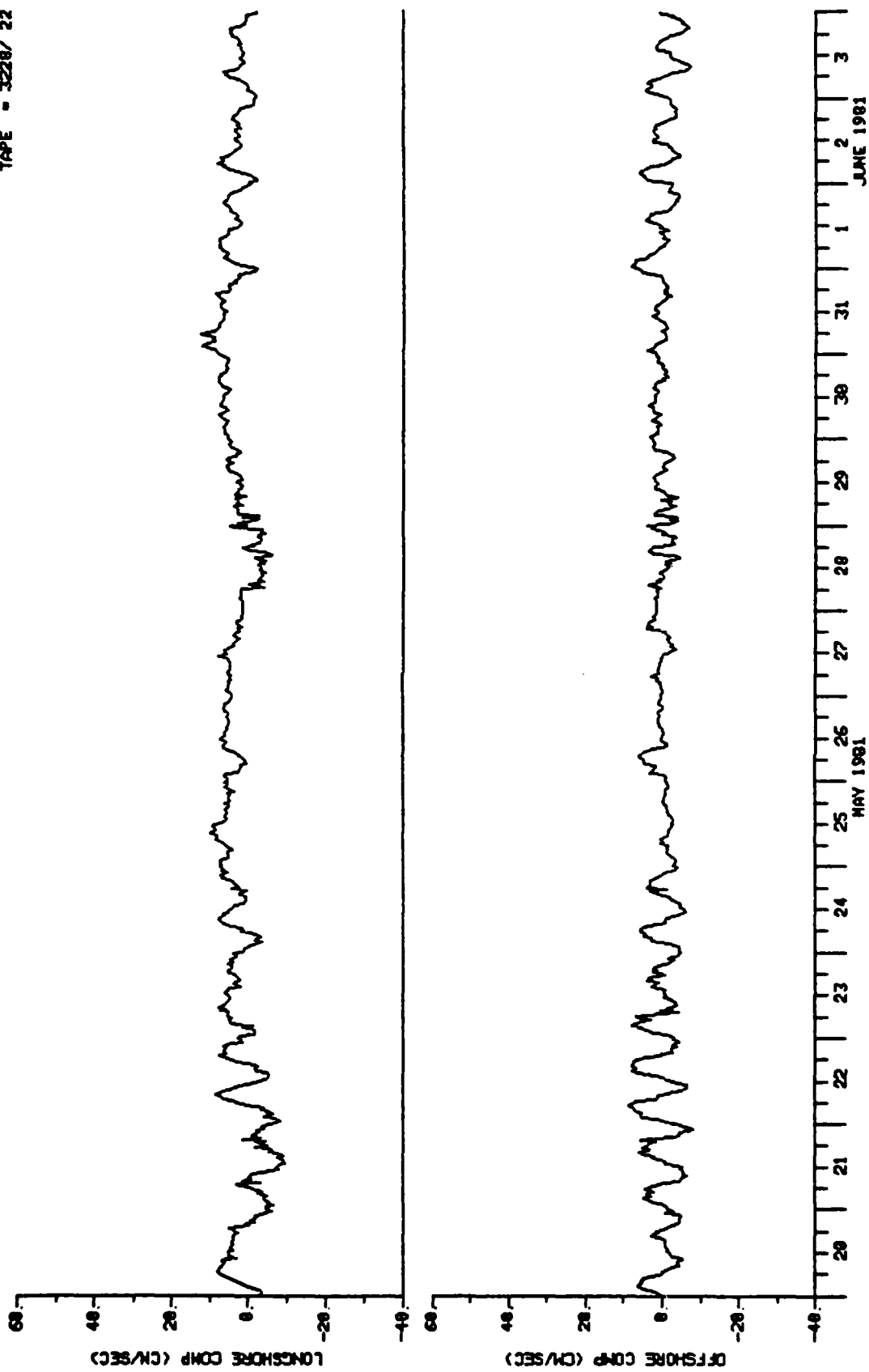
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CT-2
DEPTH - 100
TAPE - 3228/ 22



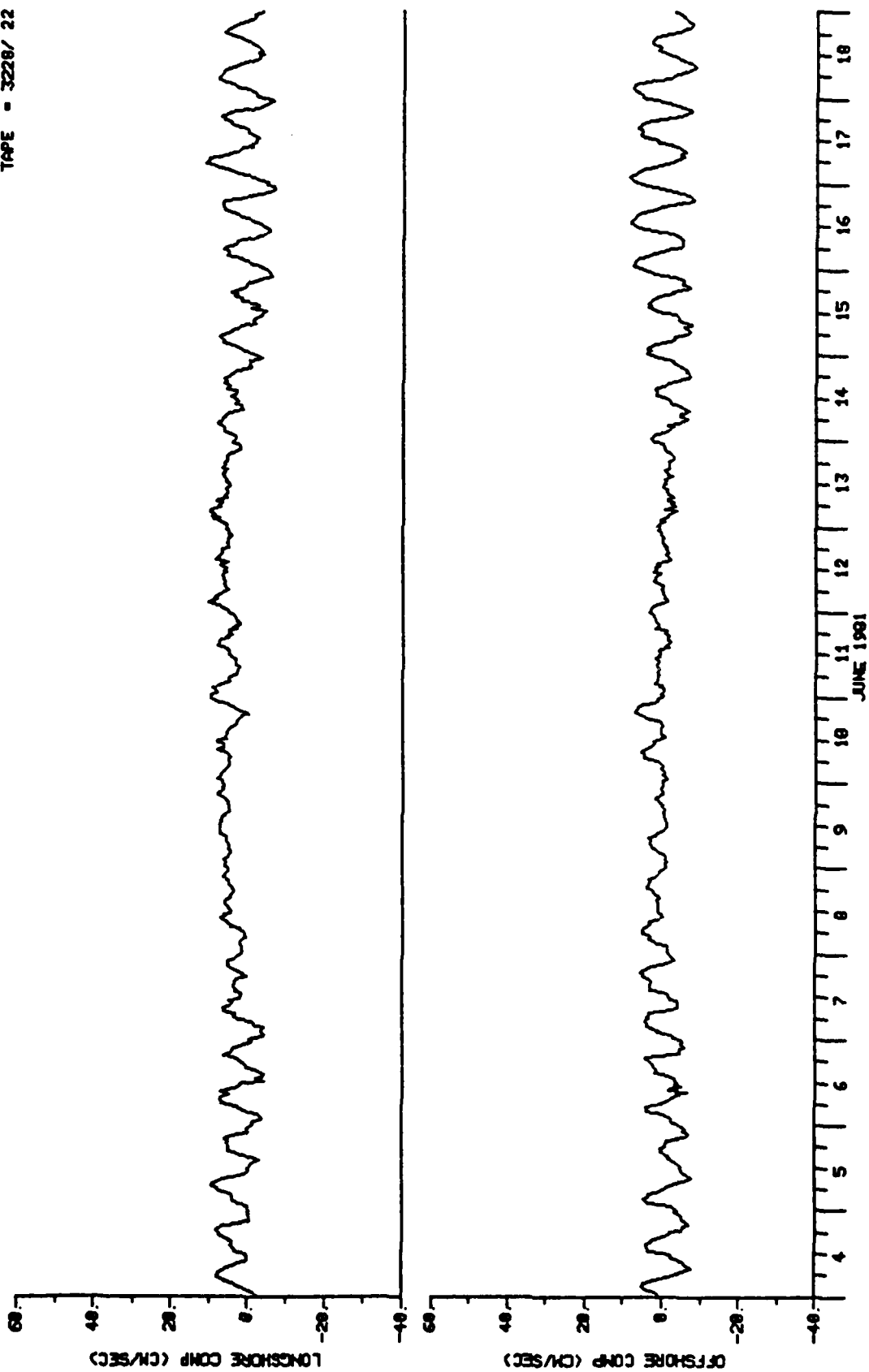
USCG BEAUFORT SEA STUDY

PAGE 4
STN ID - CH-2
DEPTH - 100
TAPE - 3228/ 22



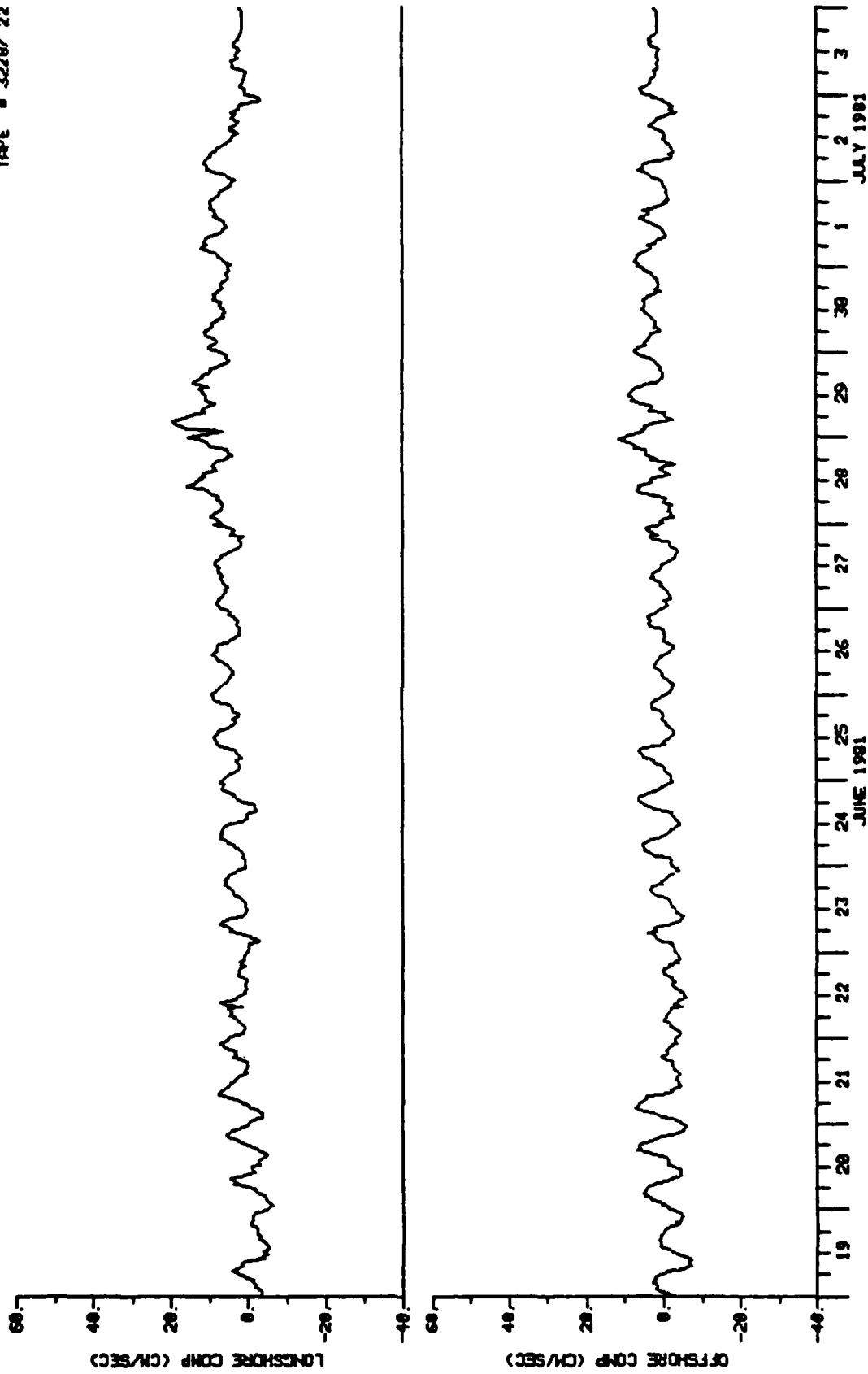
USCG BEAUFORT SEA STUDY

PAGE - 5
STN13 - CH-2
DEPTH - 188
TAPE - 3228/ 22



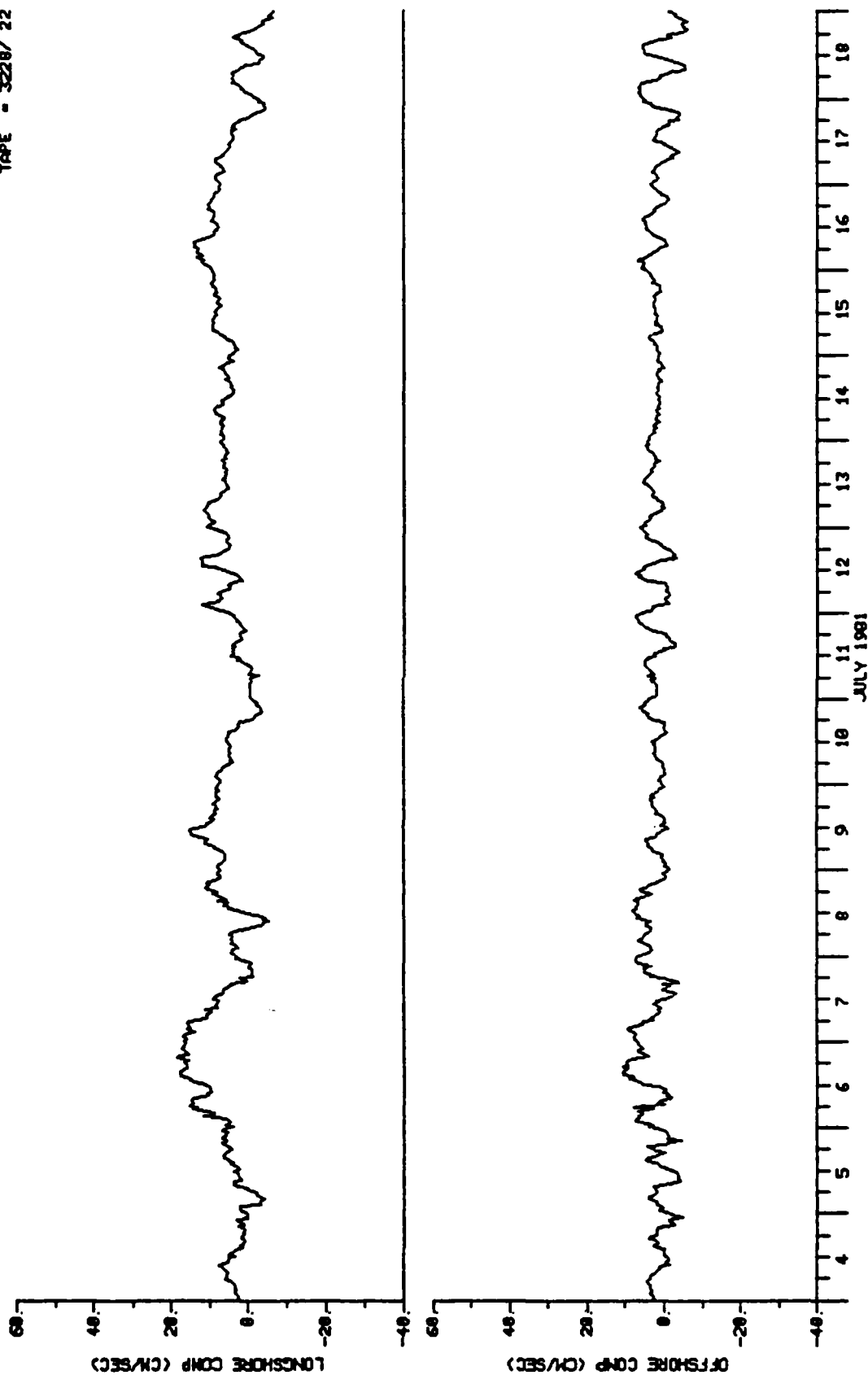
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - CH-2
DEPTH - 100
TAPE - 3228/22



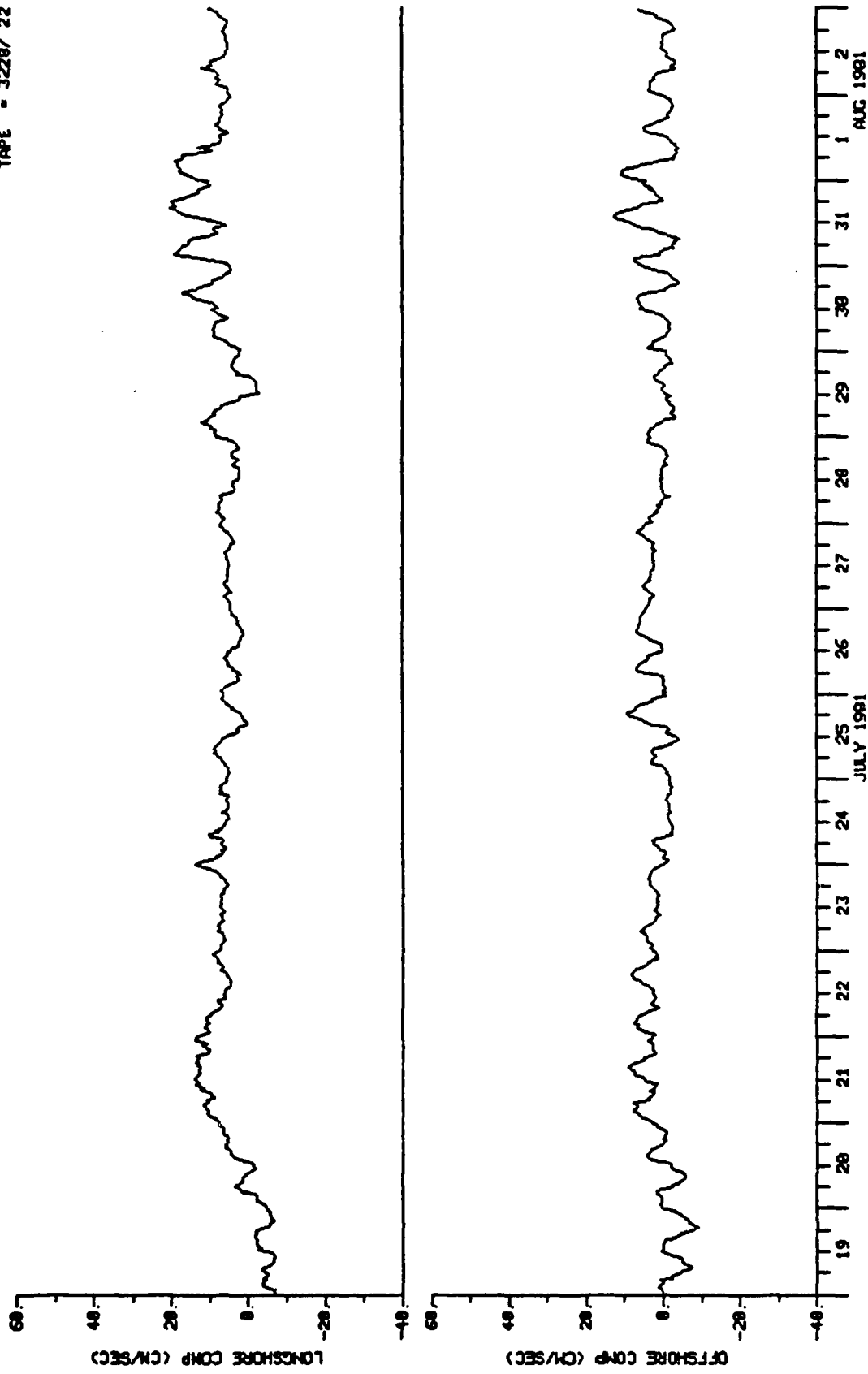
USCG BEAUFORT SEA STUDY

PAGE - 7
STNID - CH-2
DEPTH - 100
TAPE - 3228/ 22



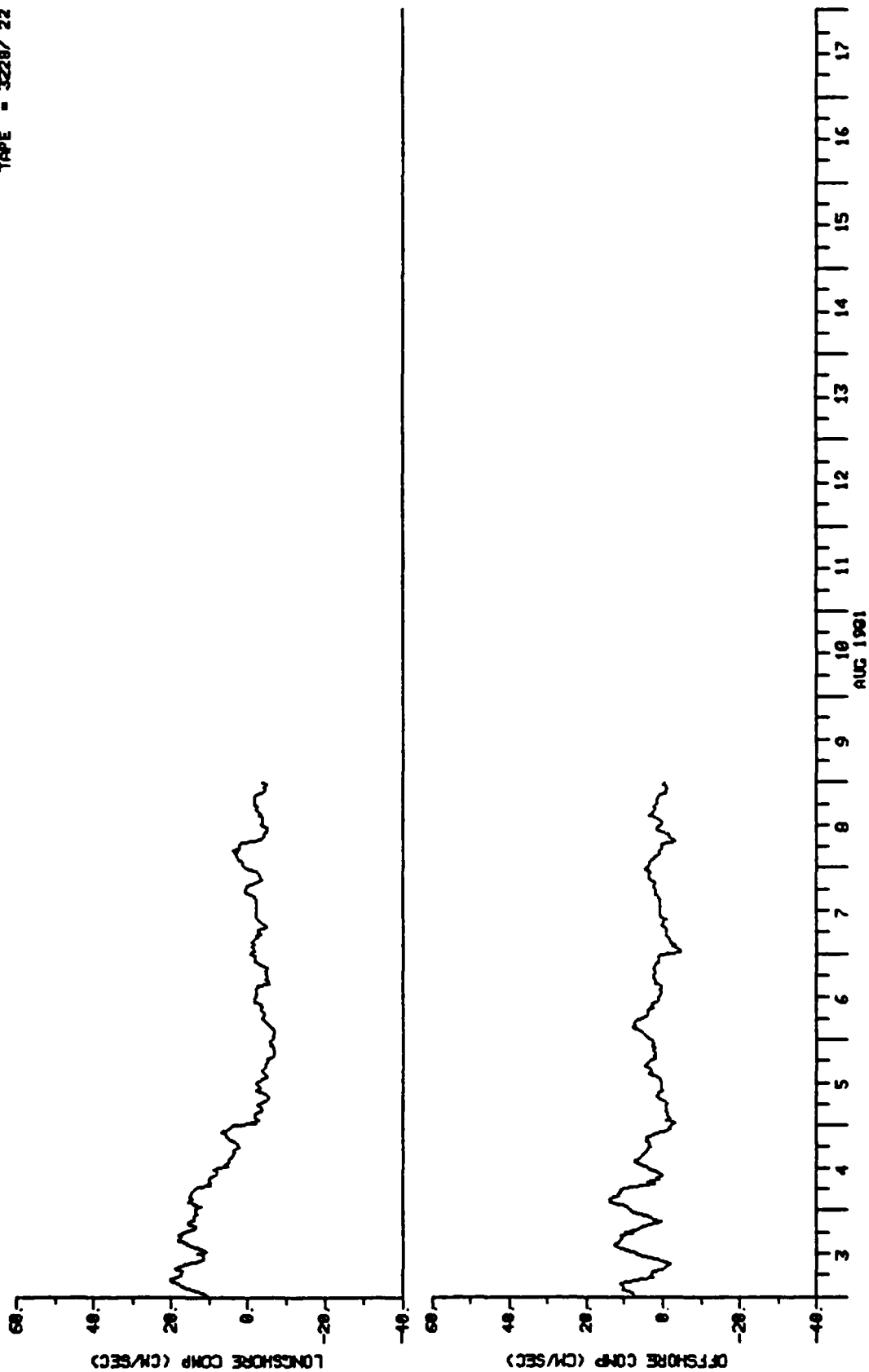
USCG BEAUFORT SEA STUDY

PAGE - 8
STATION - CH-2
DEPTH - 100
TAPE - 3228/ 22



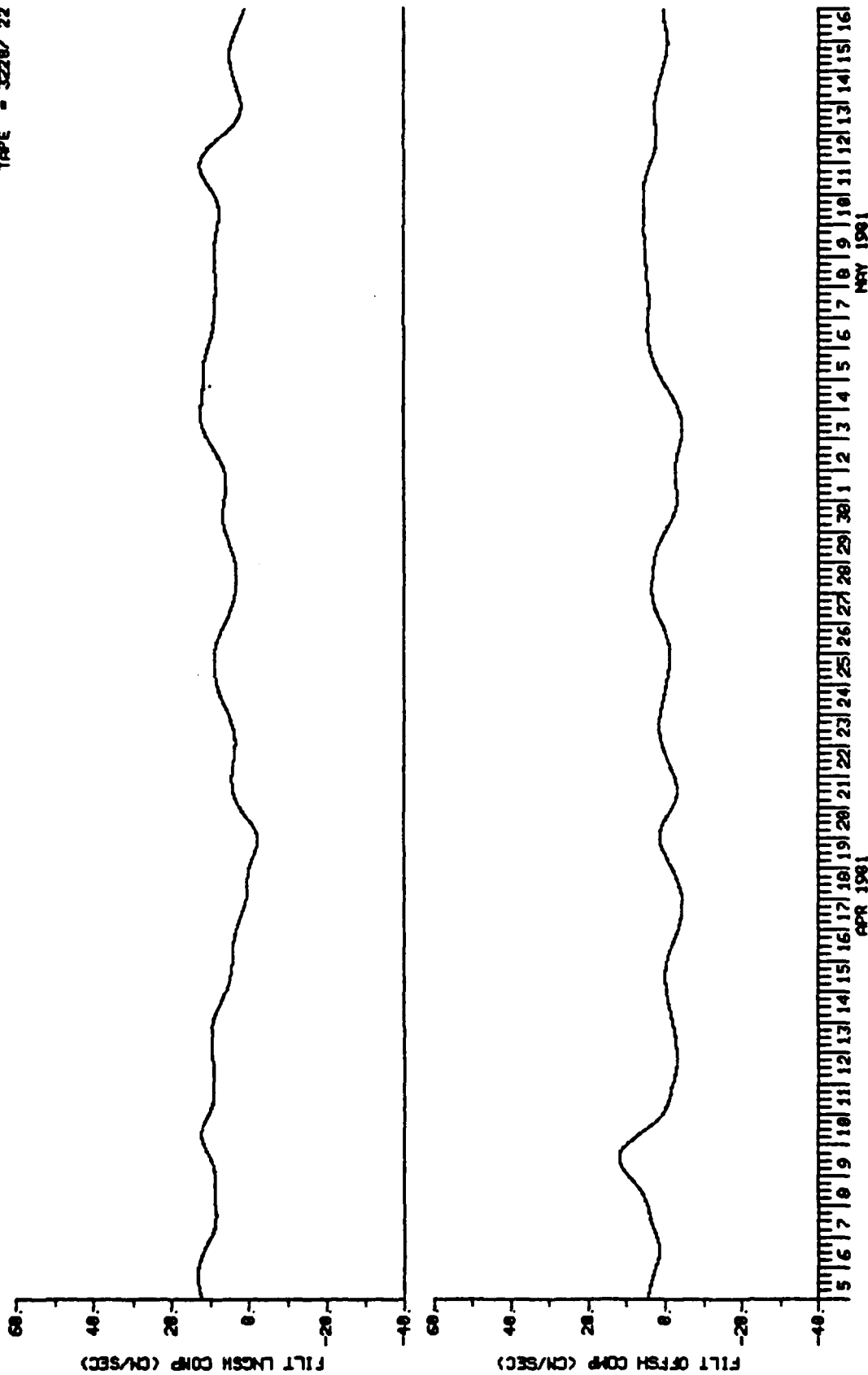
USCG BEAUFORT SEA STUDY

PAGE - CH-2 9
STNID - 100
DEPTH - 100
TAPE - 3228/22



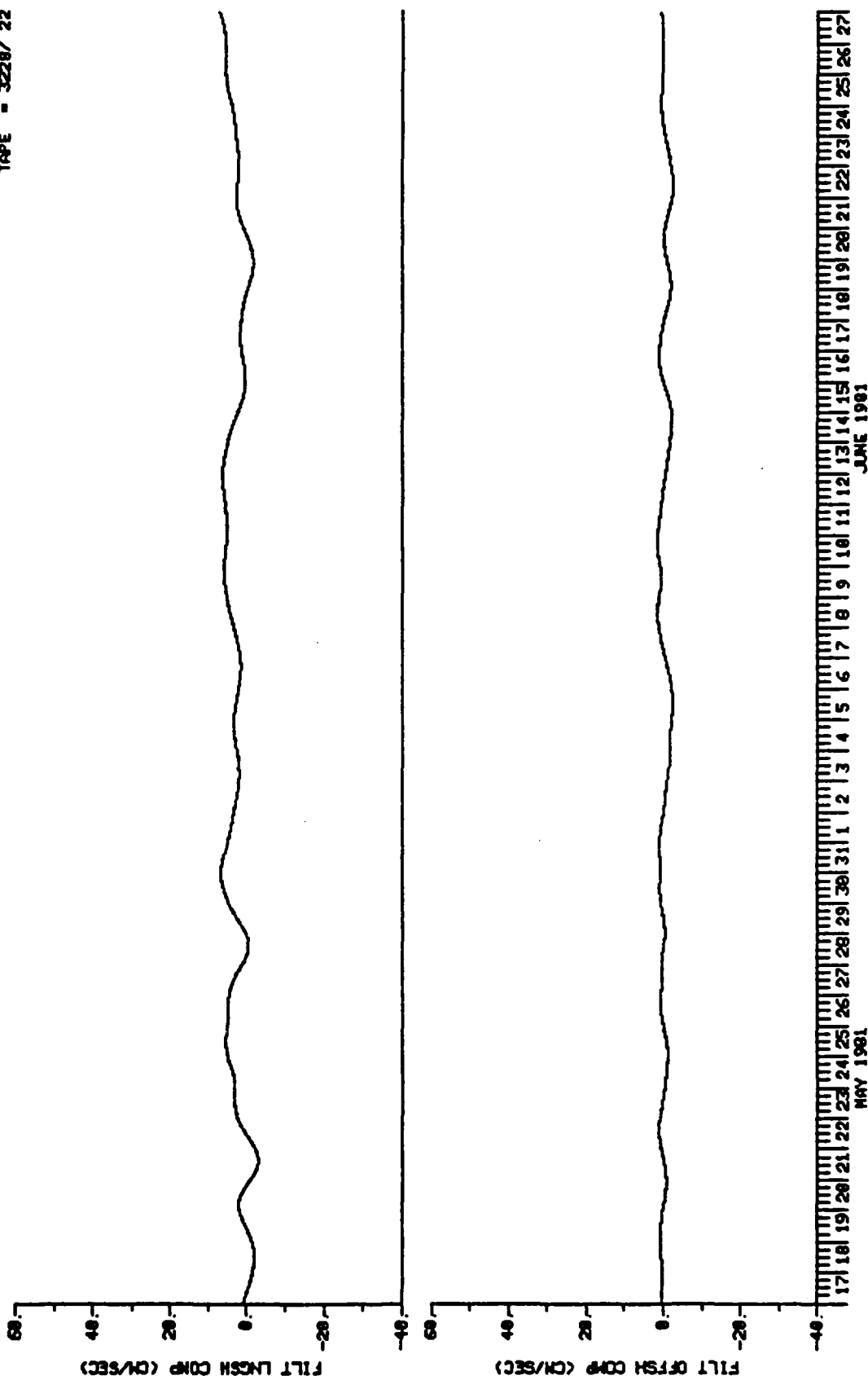
USCG BEAUFORT SEA STUDY

PAGE - 1
 STN13 - CH-2
 ELEV - 100
 TAPE - 3228/22



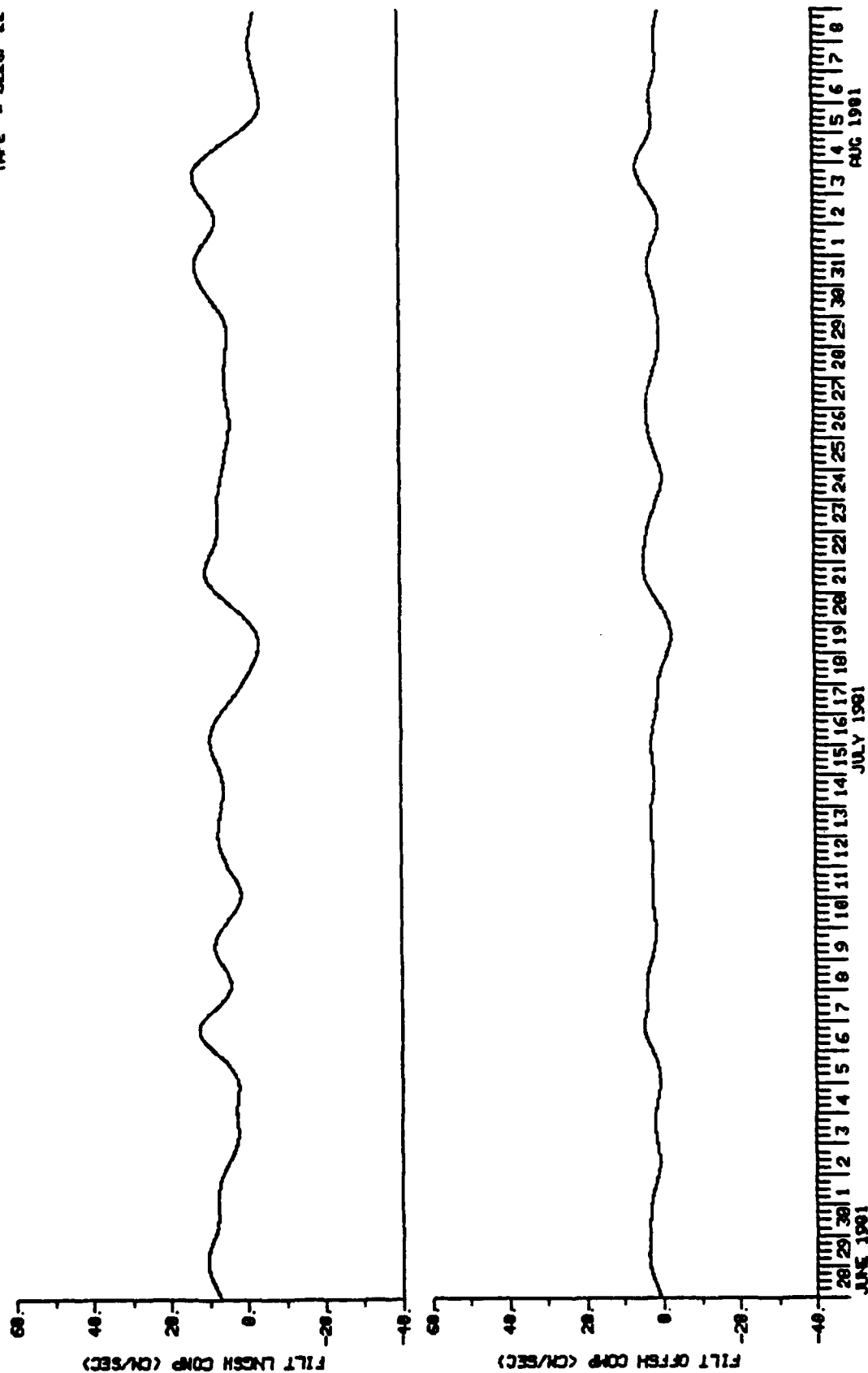
USCG BEAUFORT SEA STUDY

PAGE - 2
 STNID - CH-2
 ELEV - 100
 TAPE - 3228/ 22



USCG BEAUFORT SEA STUDY

PAGE 3
 STN13 - CH-2
 ELEV - 100
 TAPE - 3228/ 22



CM31

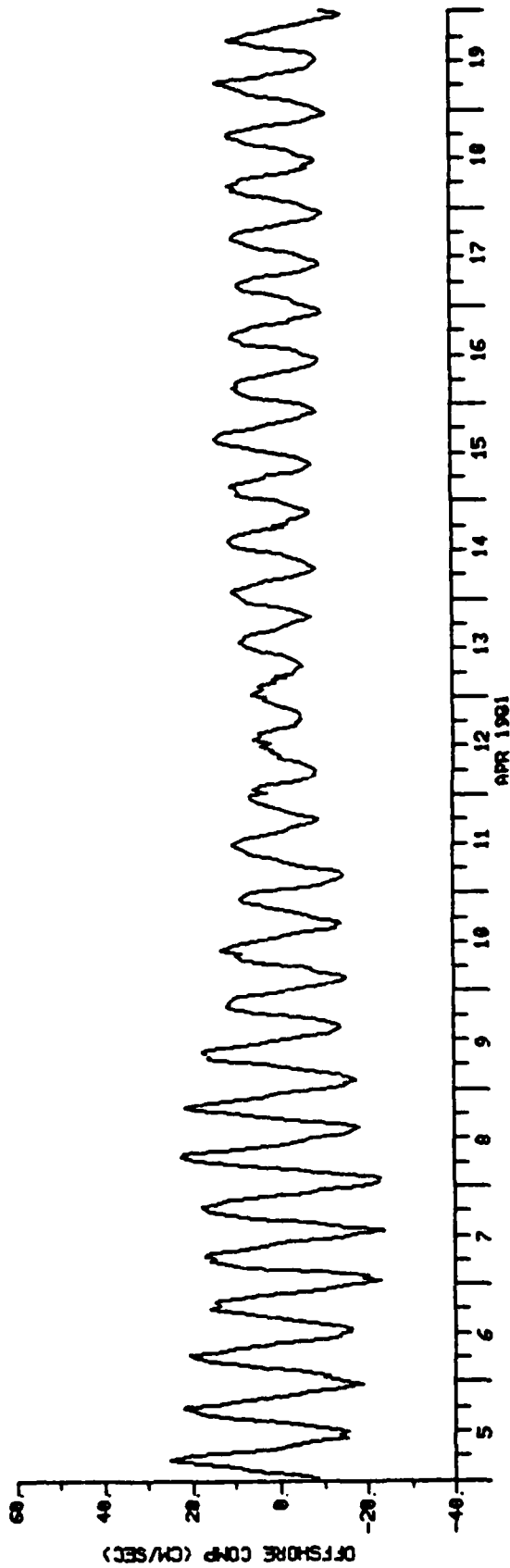
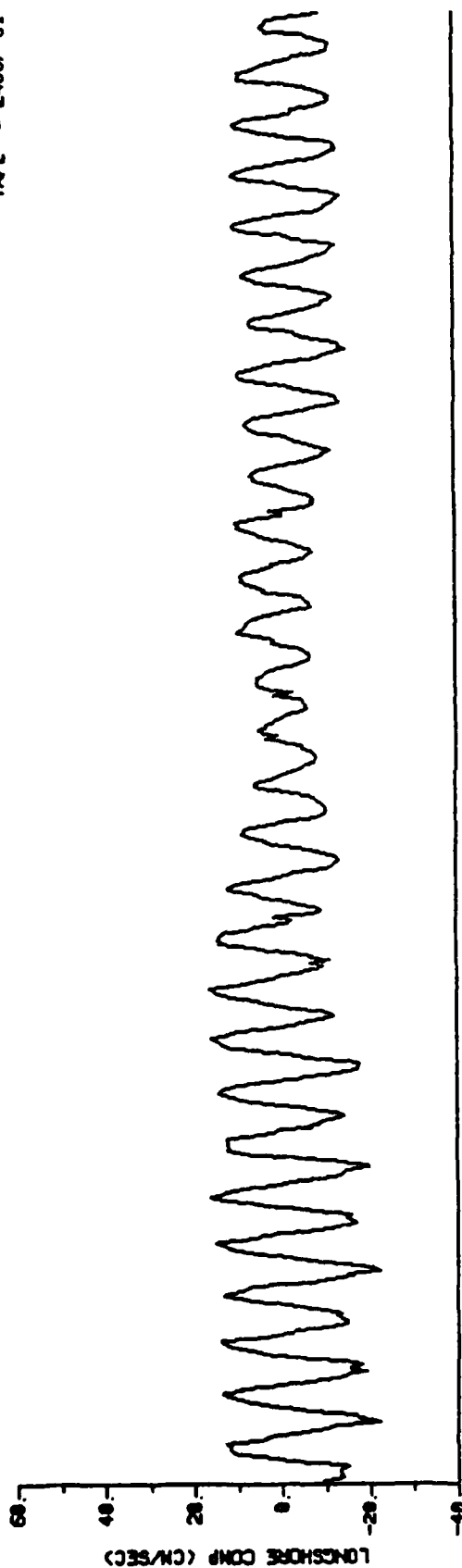
37 m depth
71° 23.2' N 130° 21.5' W
5 April 1981 to 9 August 1981
Longshore direction is 65° T
Offshore direction is 335° T

Filter is 25 hour low pass

²
A₂₄ A₂₅ (Godin, 1972)

USCG BEAUFORT SEA STUDY

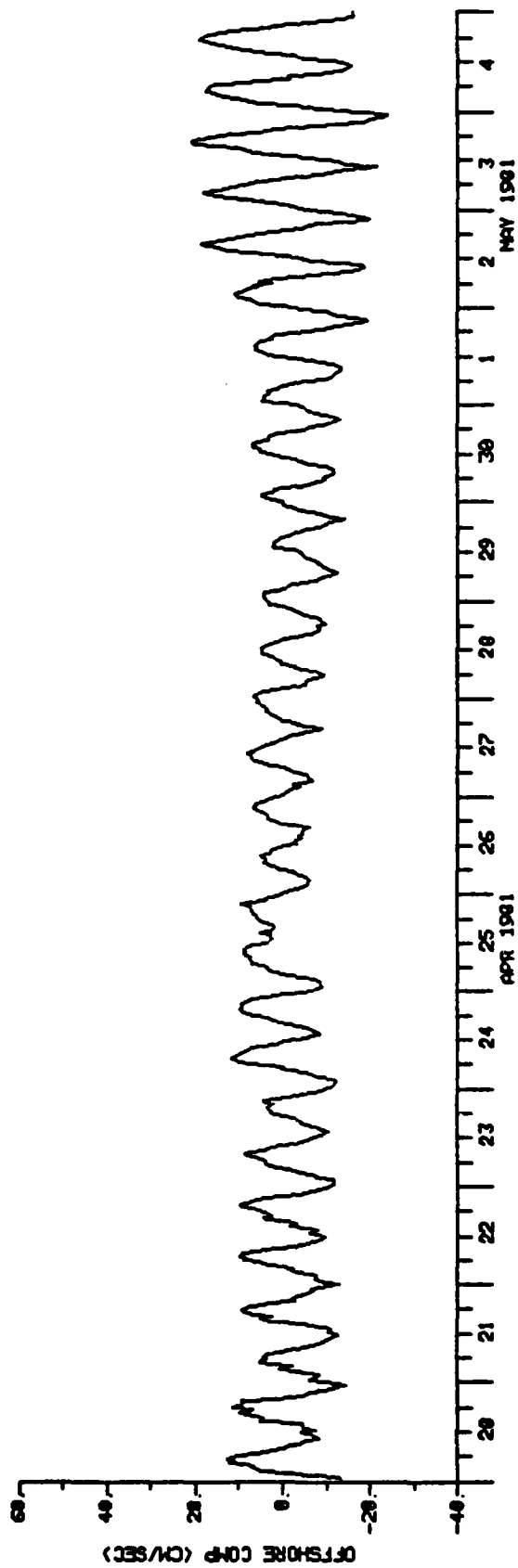
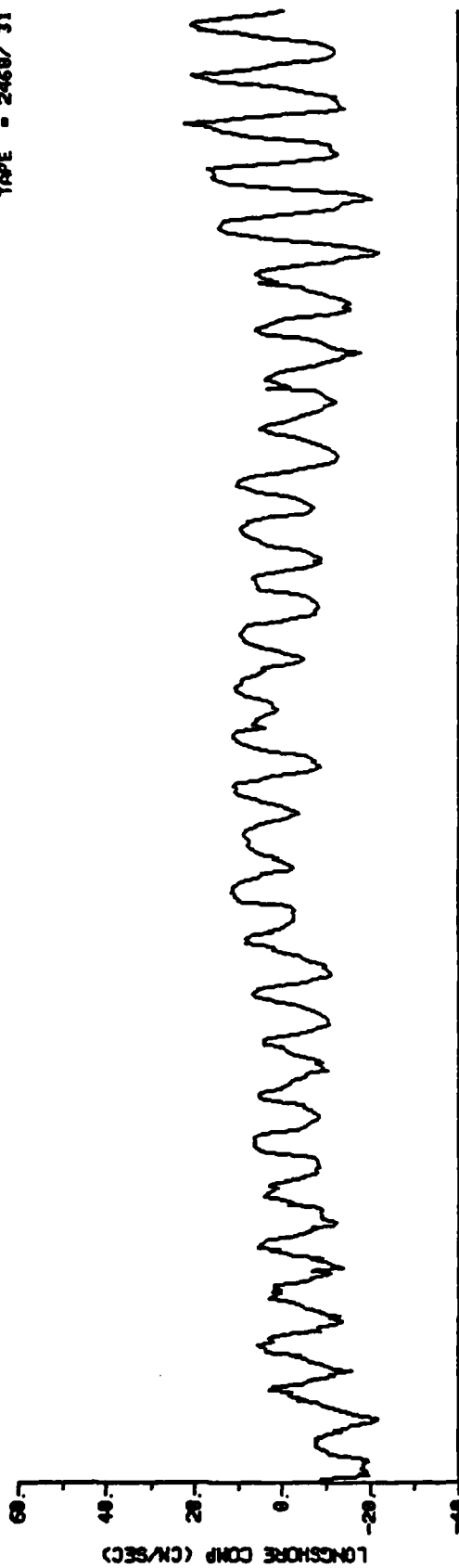
PAGE - 1
STATION - CH-3
DEPTH - 43
TAPE - 2468/ 31



APR 1961

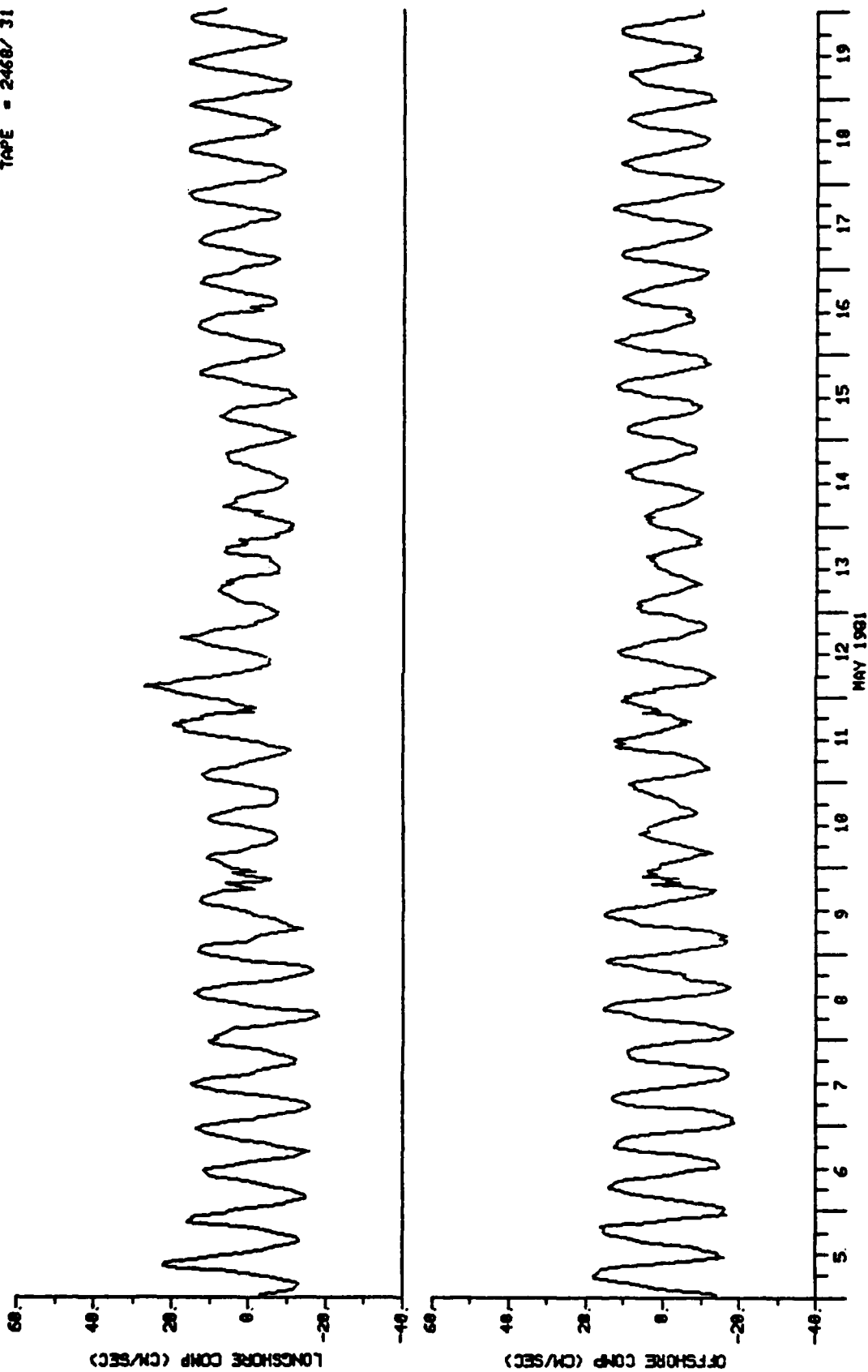
USCG BEAUFORT SEA STUDY

PAGE - 2
STNID - CH-3
DEPTH - 43
TAPE - 2468/31



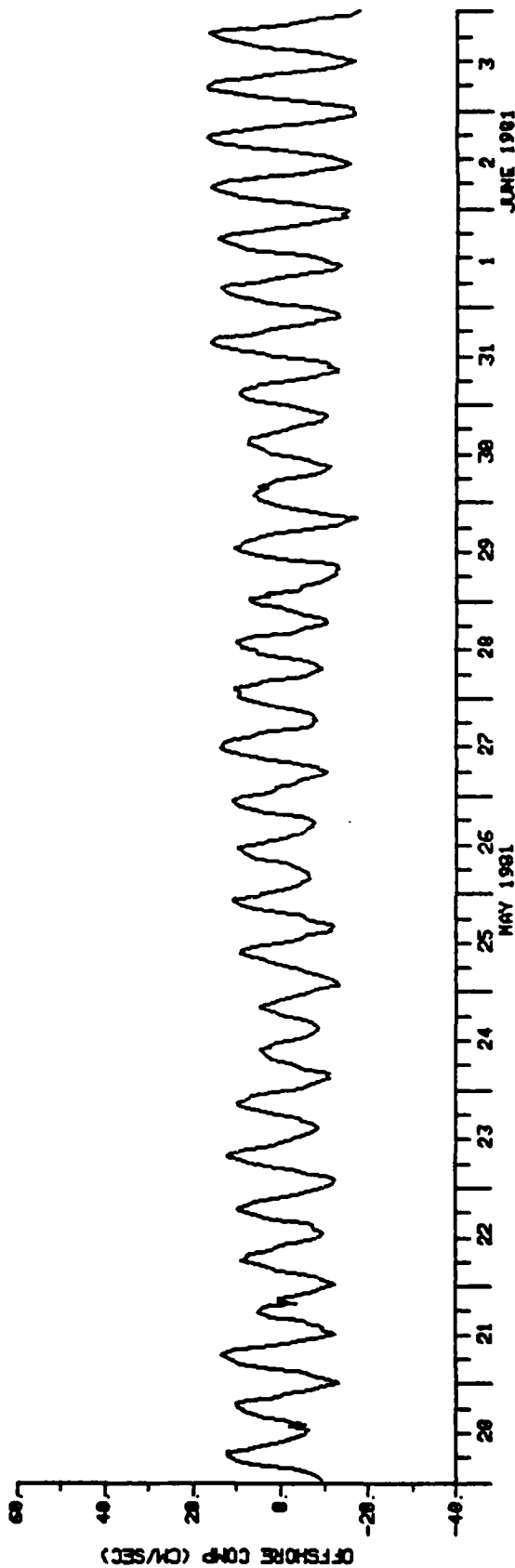
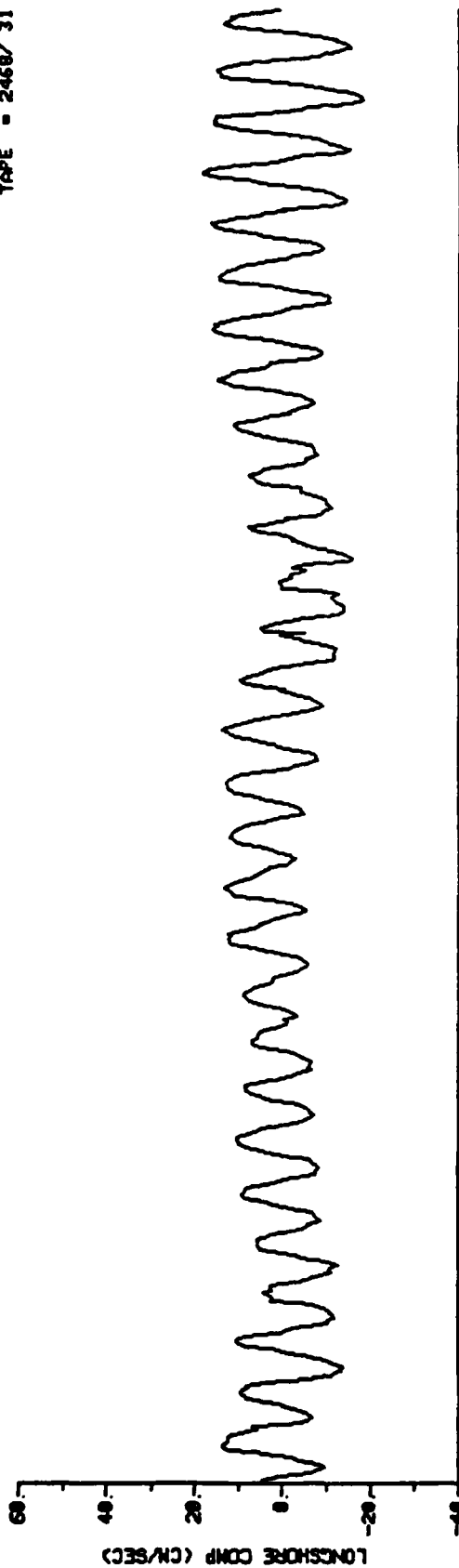
USCG BEAUFORT SEA STUDY

PAGE = 3
STNID = CM-3
DEPTH = 43
TAPE = 2468/ 31



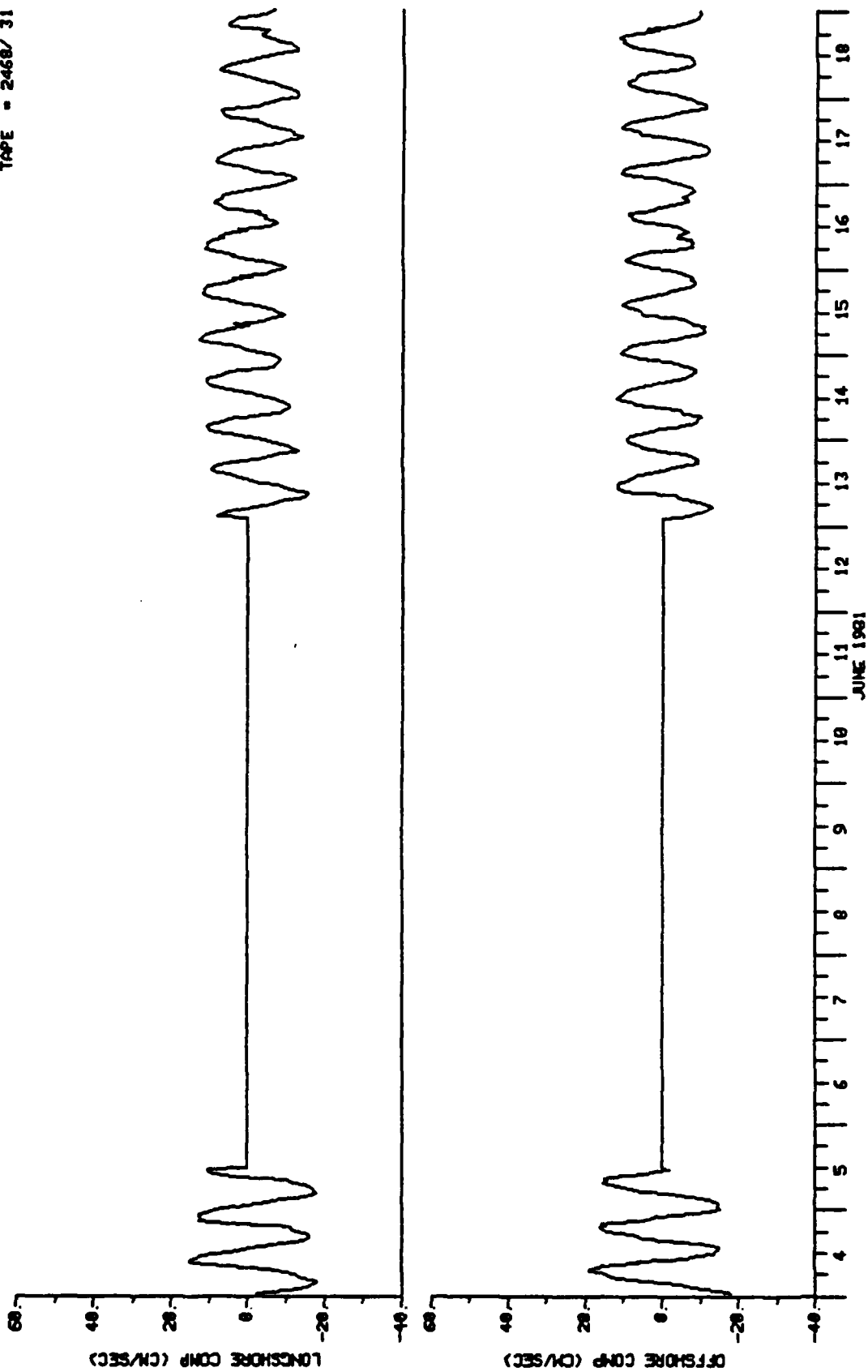
USCG BEAUFORT SEA STUDY

PAGE - 4
STNID - CH-3
DEPTH - 43
TAPE - 2468/ 31



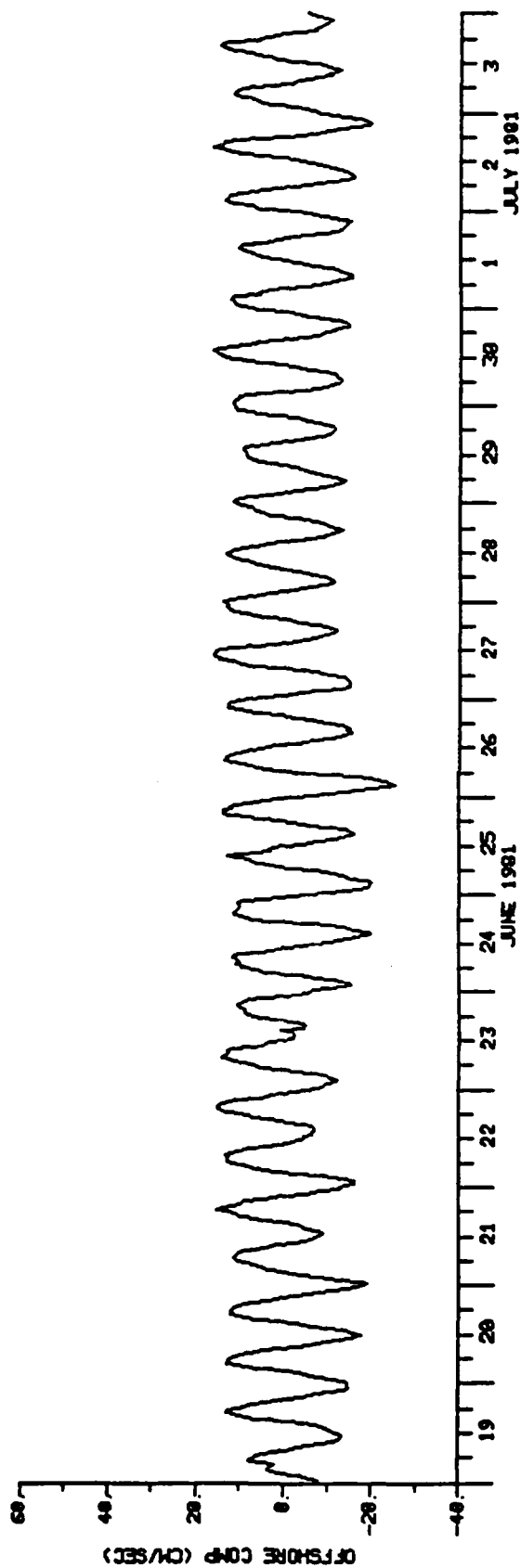
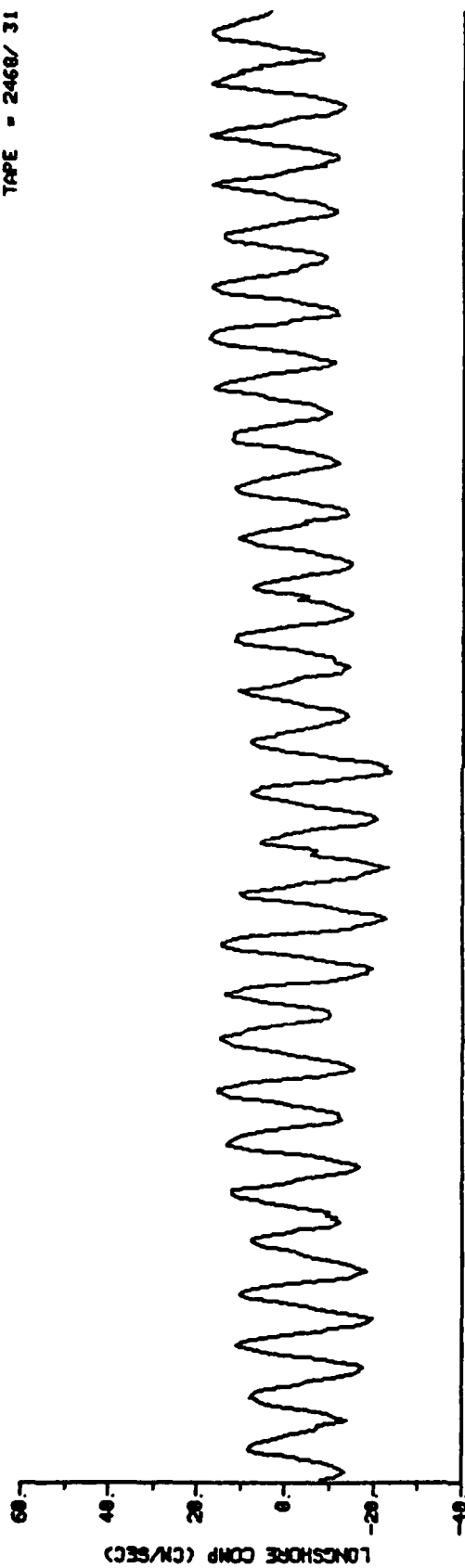
USCG BEAUFORT SEA STUDY

PAGE = 5
STNID = CH-3
DEPTH = 43
TAPE = 2468/ 31



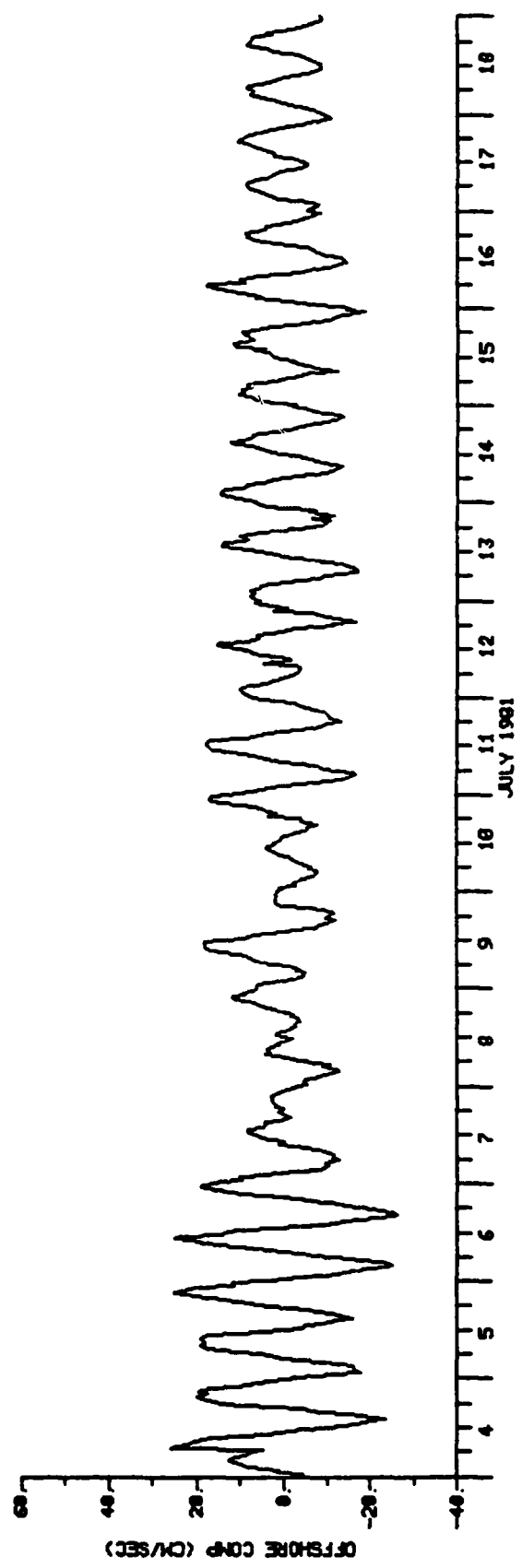
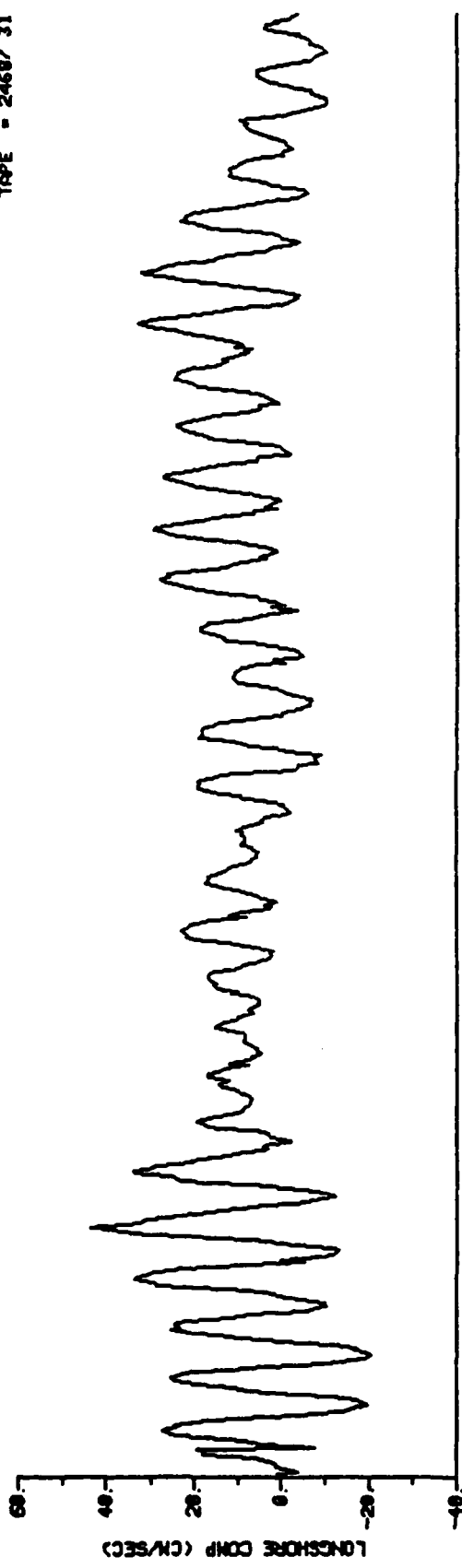
USCG BEAUFORT SEA STUDY

PAGE - 6
STN13 - CH-3
DEPTH - 43
TAPE - 2468/ 31



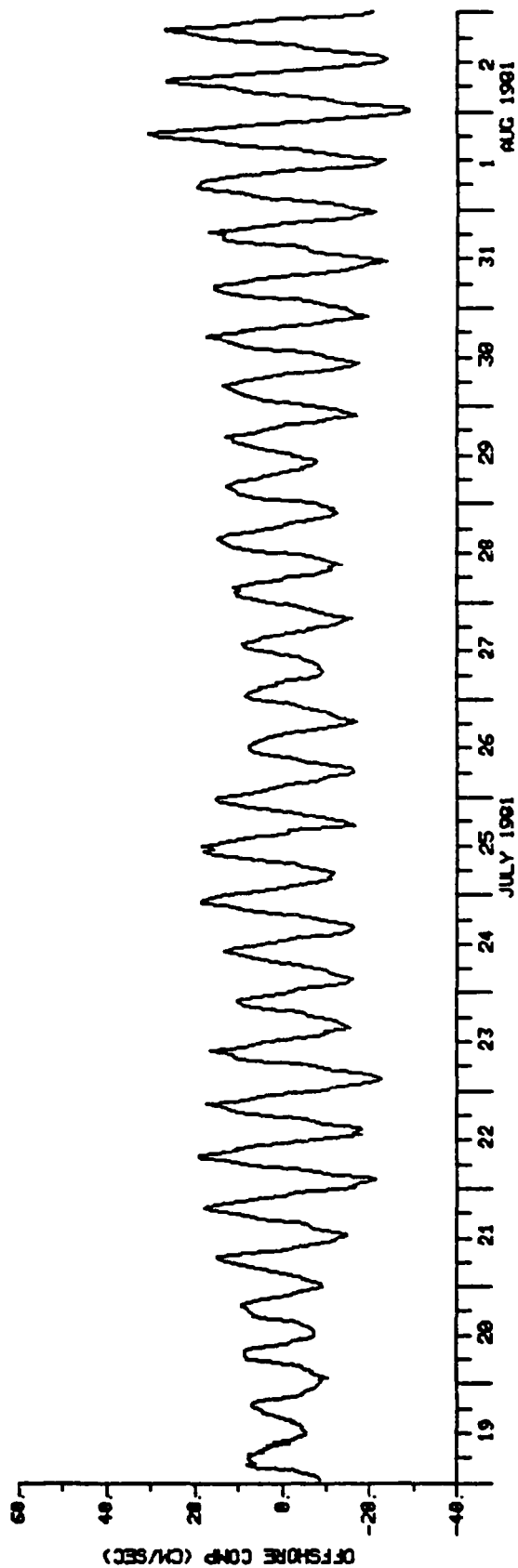
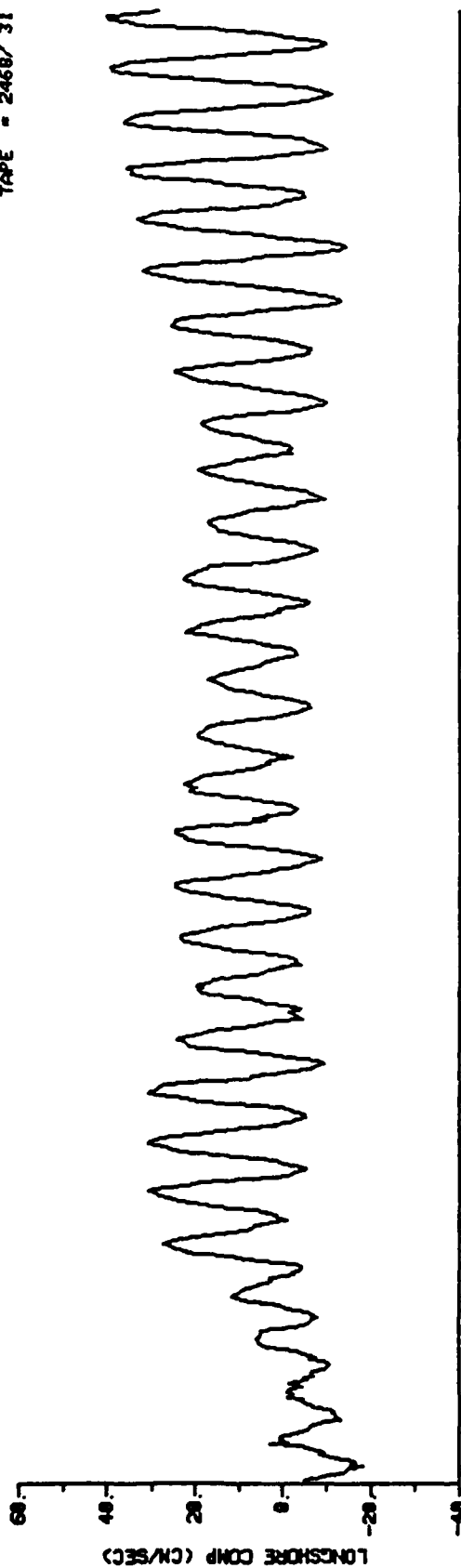
USCG BEAUFORT SEA STUDY

PAGE = 7
STNID = CM-3
DEPTH = 43
TAPE = 2468/31



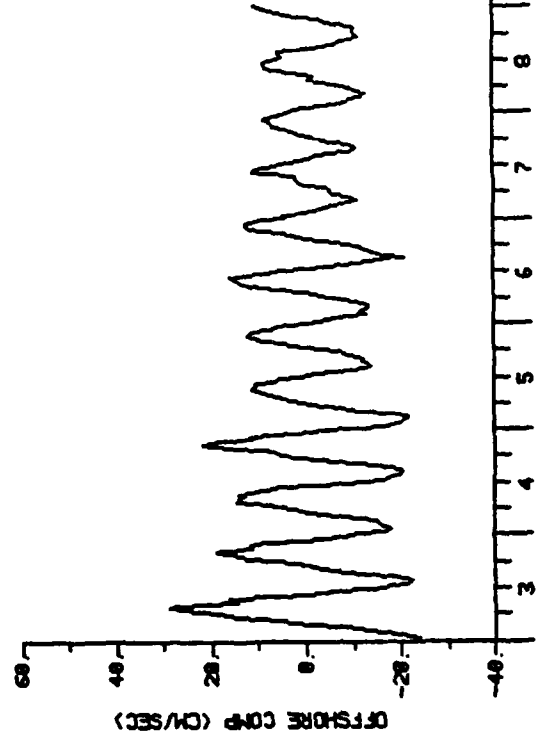
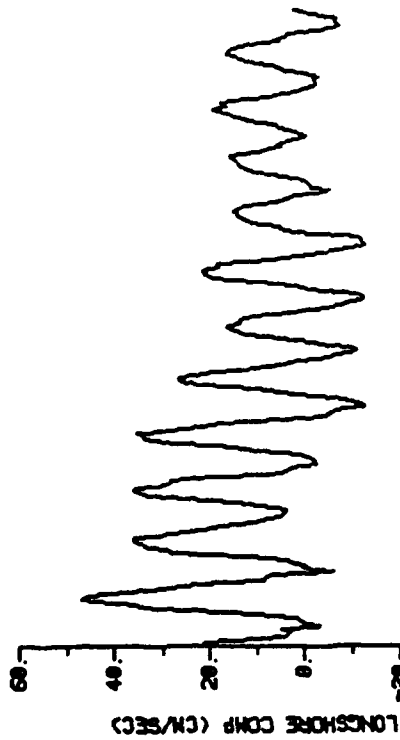
USCG BEAUFORT SEA STUDY

PAGE - 8
STN13 - CH-3
DEPTH - 43
TAPE - 2468/31



USCG BEAUFORT SEA STUDY

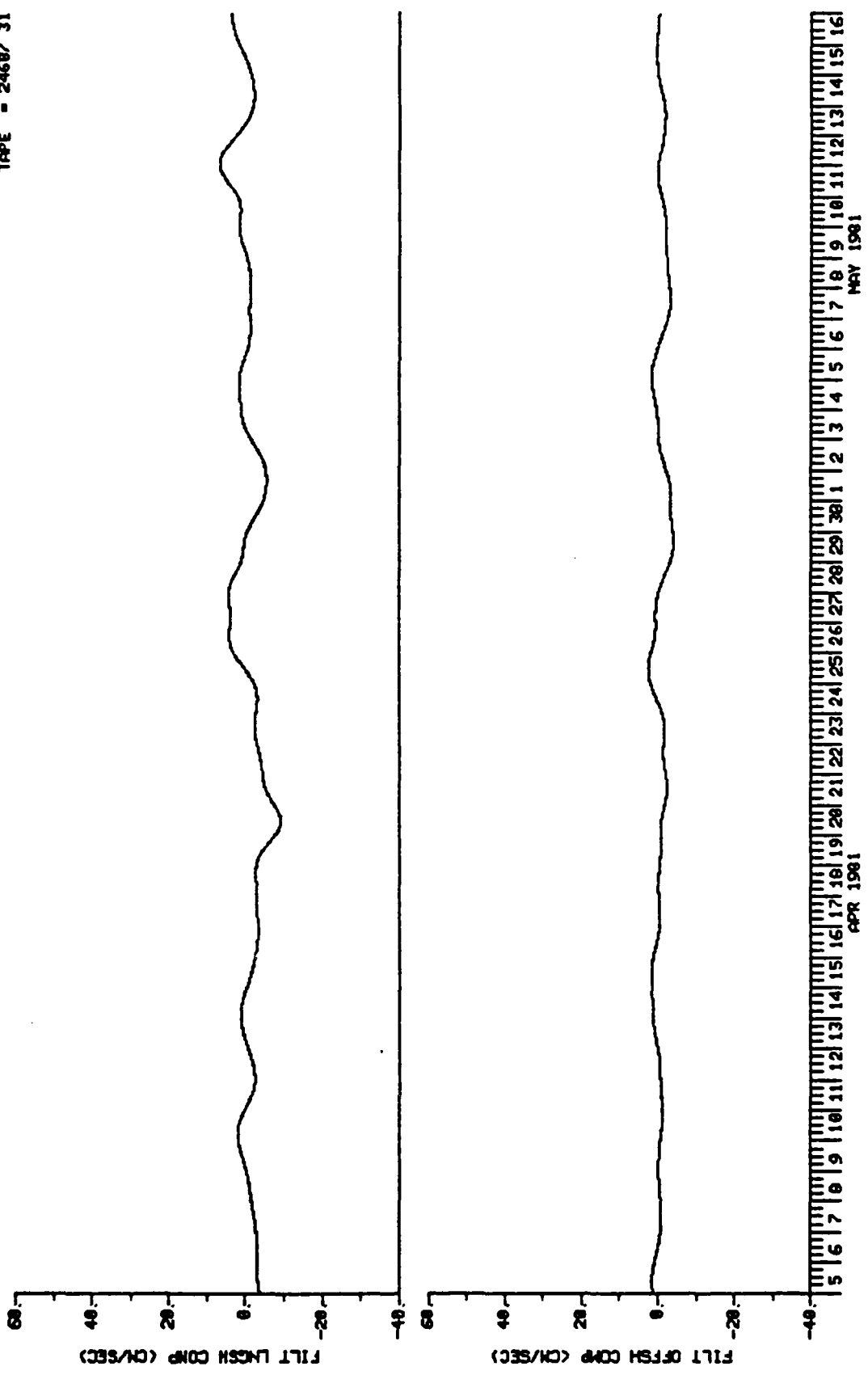
PAGE 9
 STNID - CH-3
 DEPTH - 43
 TAPE - 2468/ 31



AUG 1991

USCG BEAUFORT SEA STUDY

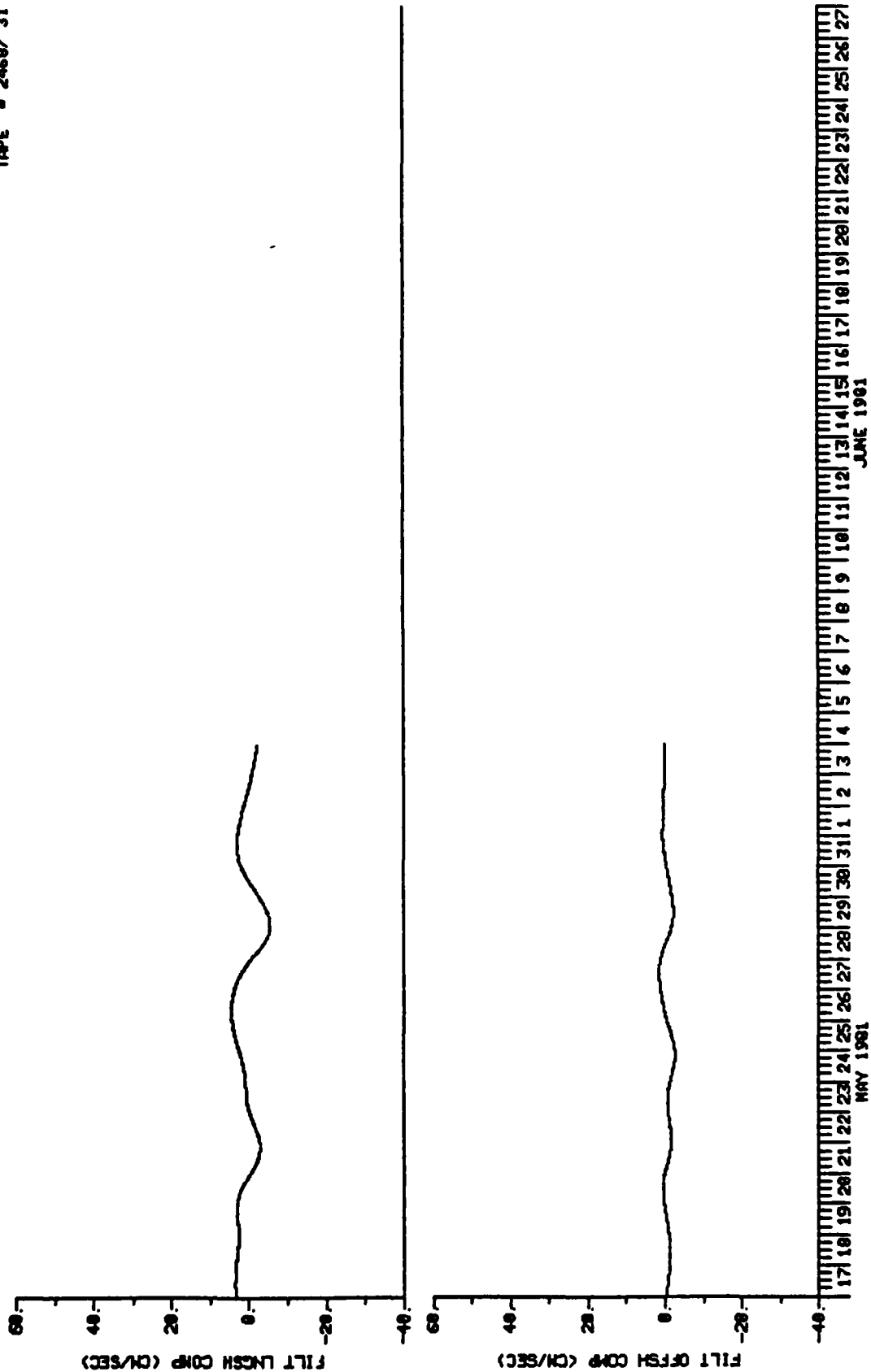
PAGE - 1
 STNID - CM-3
 ELEV - 43
 TAPE - 2468/ 31



5 6 7 8 9 10 11 12 13 14 15 16
 APR 1981
 MAY 1981

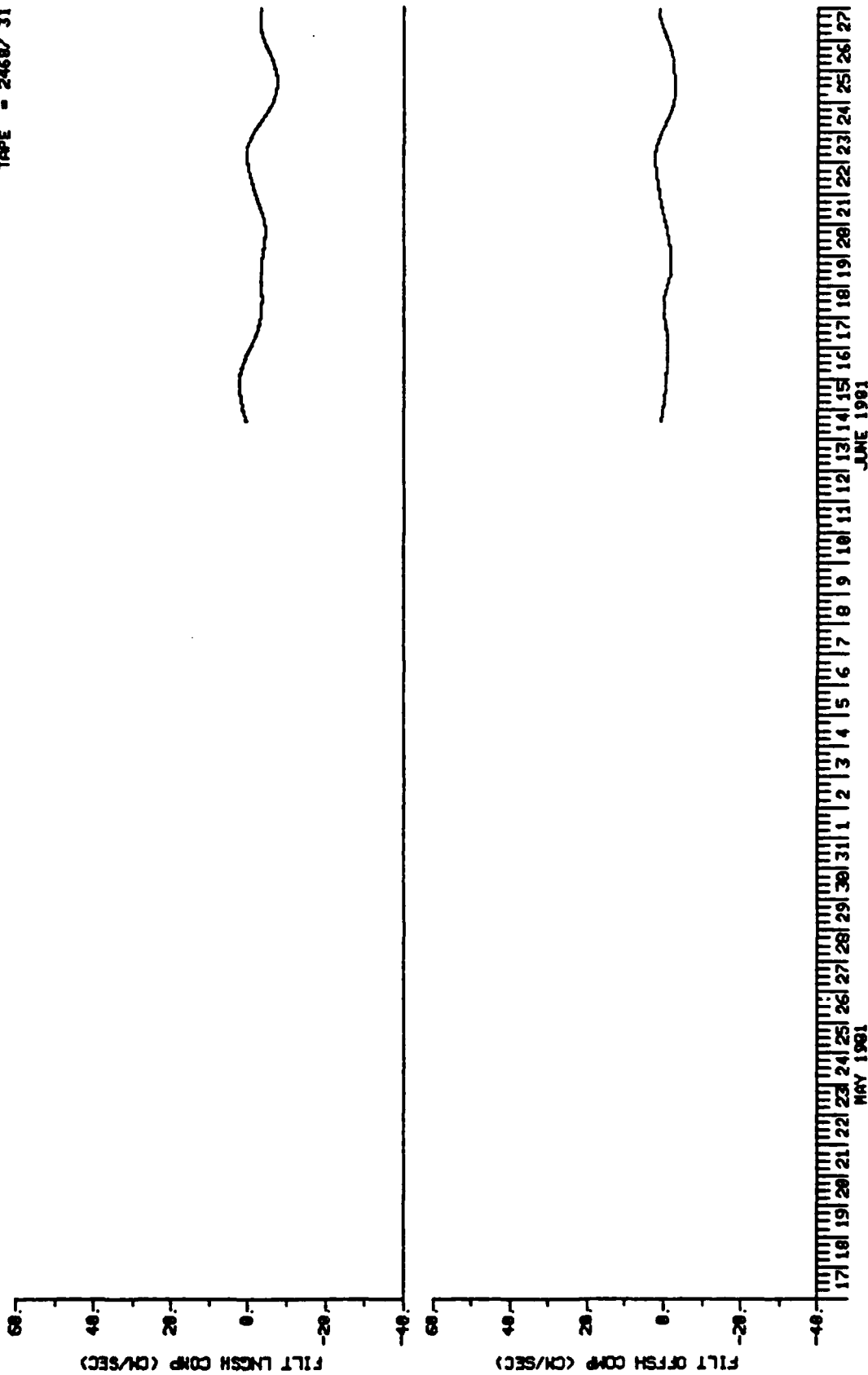
USCG BEAUFORT SEA STUDY

PAGE - 2
 STN13 - CH-3
 ELEV - 43
 TAPE - 2468/ 31



USCG BEAUFORT SEA STUDY

PAGE - 1
 STNID - CH-3
 ELEV - 43
 TAPE - 2468/ 31

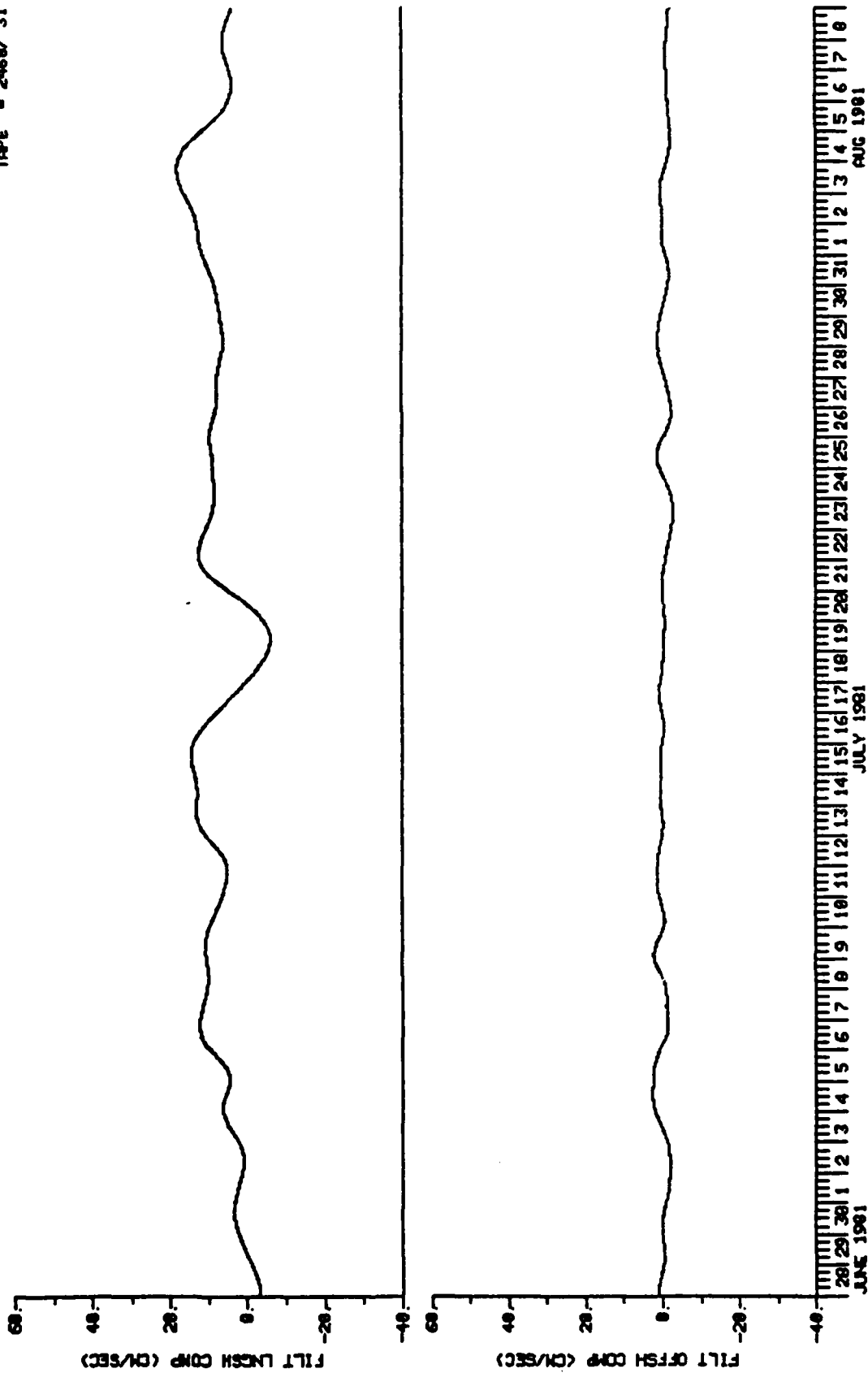


JUNE 1981

MAY 1981

USCG BEAUFORT SEA STUDY

PAGE - 2
 STNID - CH-3
 ELEV - 43
 TAPE - 2468/ 31



CM32

57 m depth

71° 23.2' N 130° 21.5' W

5 April 1981 to 9 August 1981

Longshore direction is 65° T

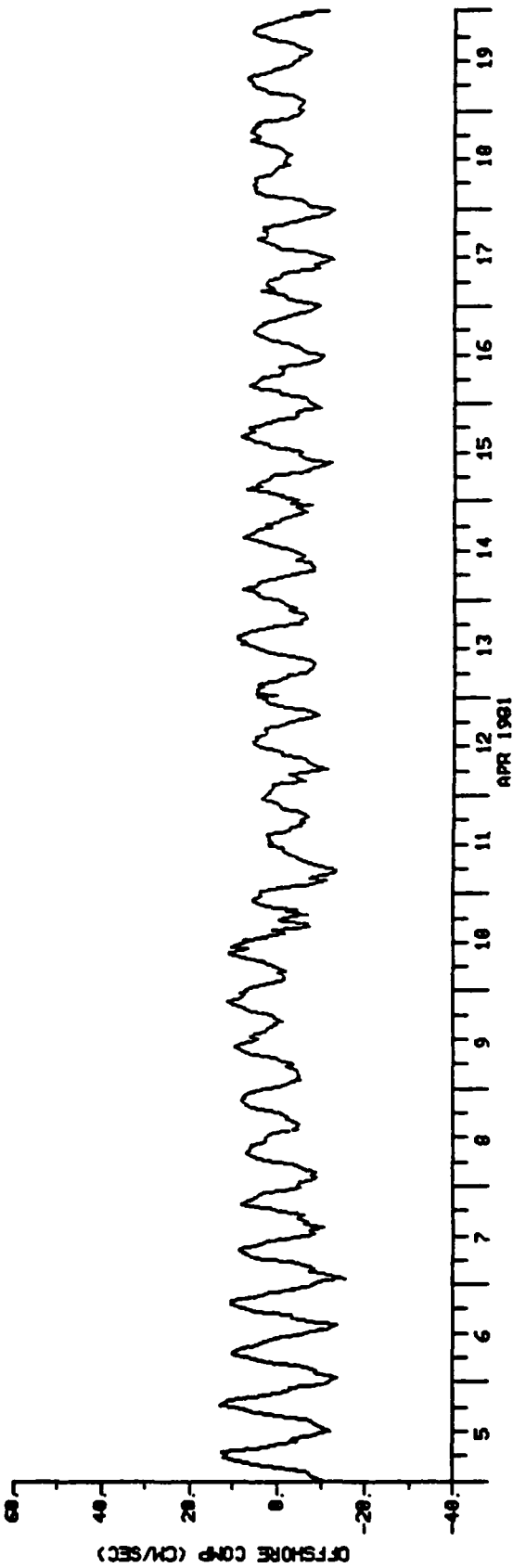
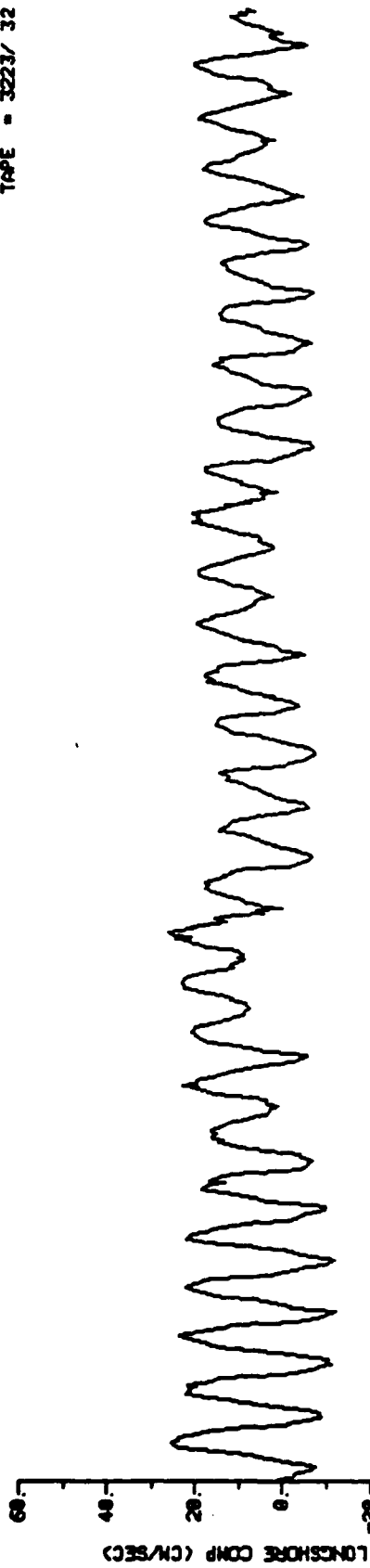
Offshore direction is 335° T

Filter is 25 hour low pass

A₂₄² A₂₅ (Godin, 1972)

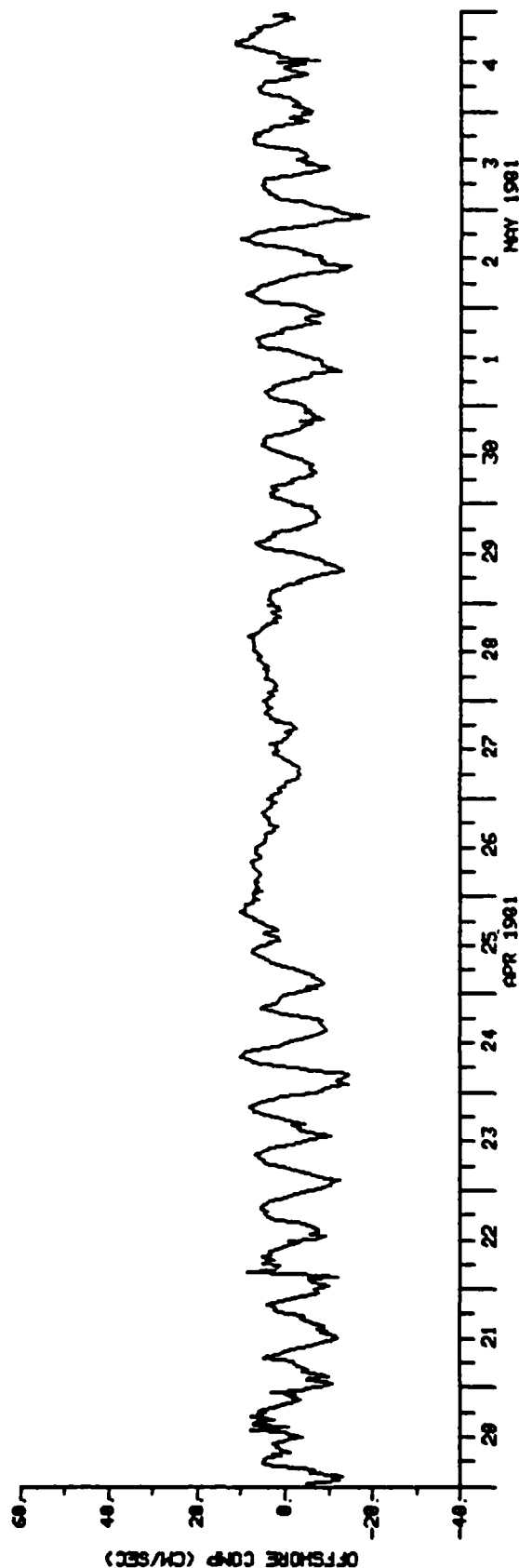
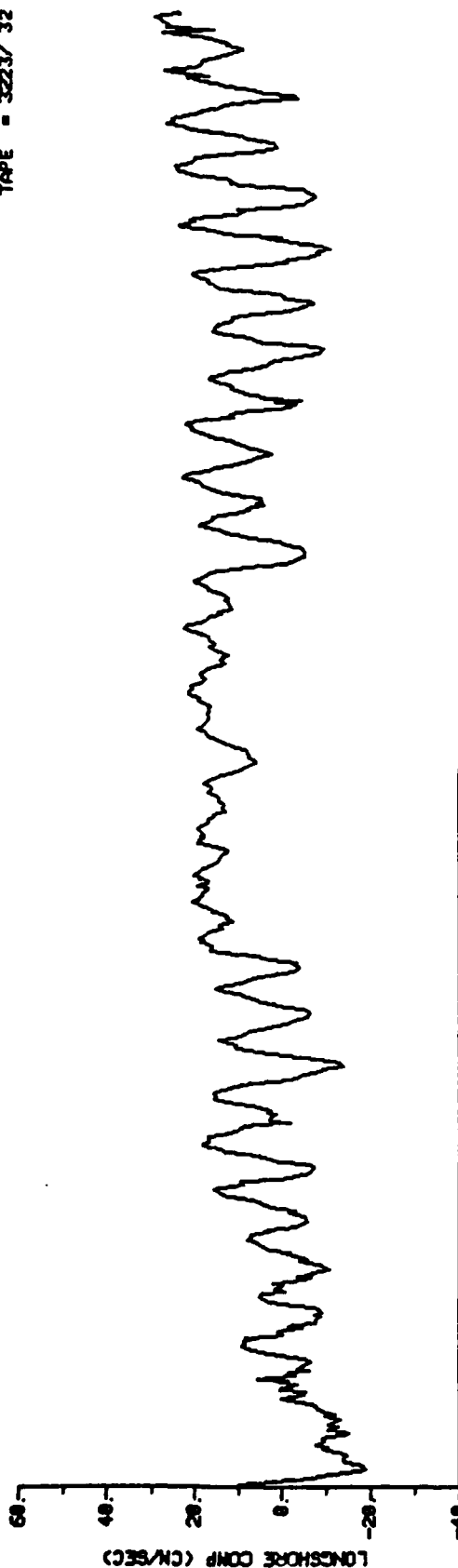
USCG BEAUFORT SEA STUDY

PAGE - 1
STATION - CH-3
DEPTH - 188
TAPE - 3223/ 32



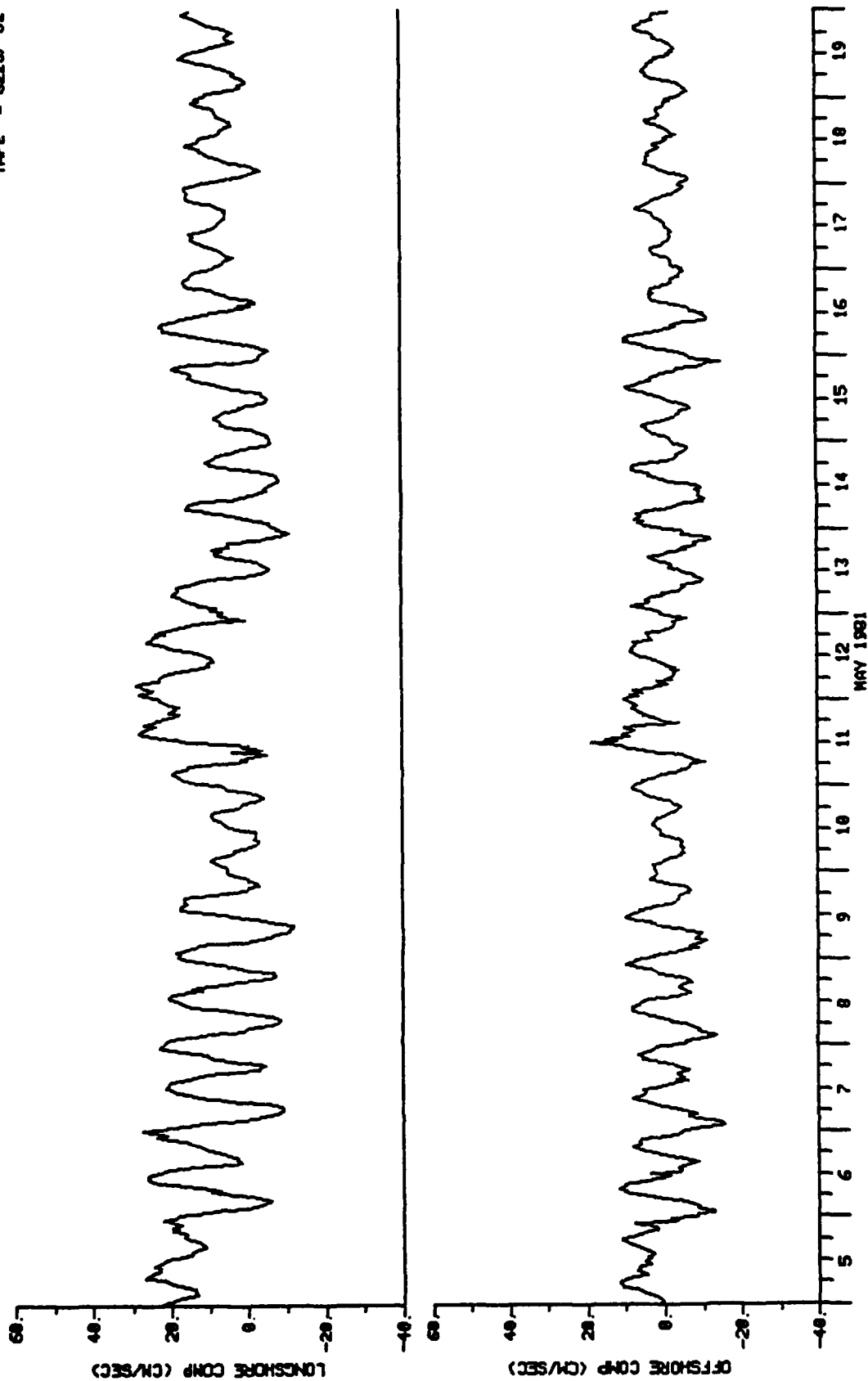
USCG BEAUFORT SEA STUDY

PAGE - 2
STNID - CH-3
DEPTH - 100
TAPE - 3223/32



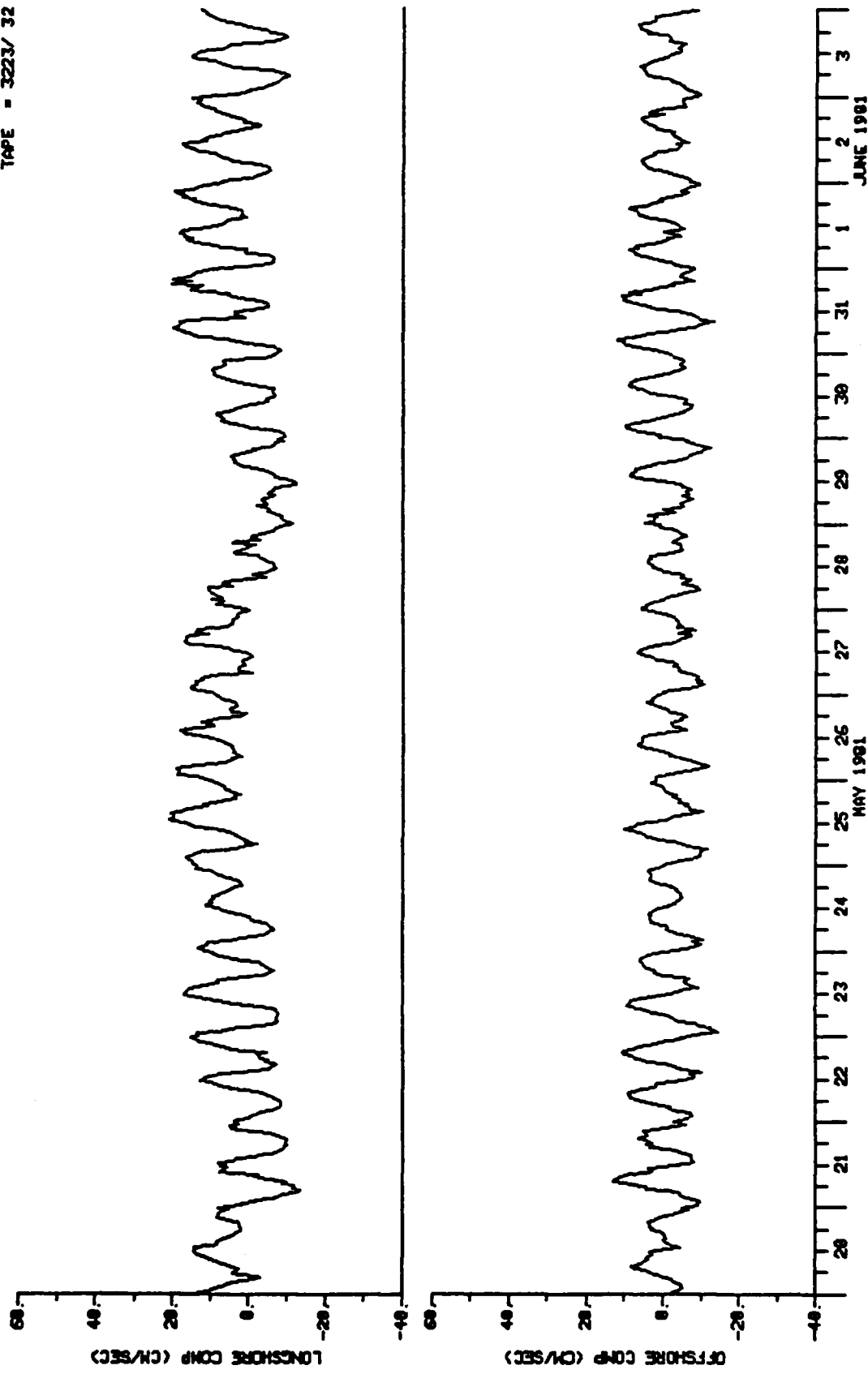
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - C4-3
DEPTH - 100
TAPE - 3223/32



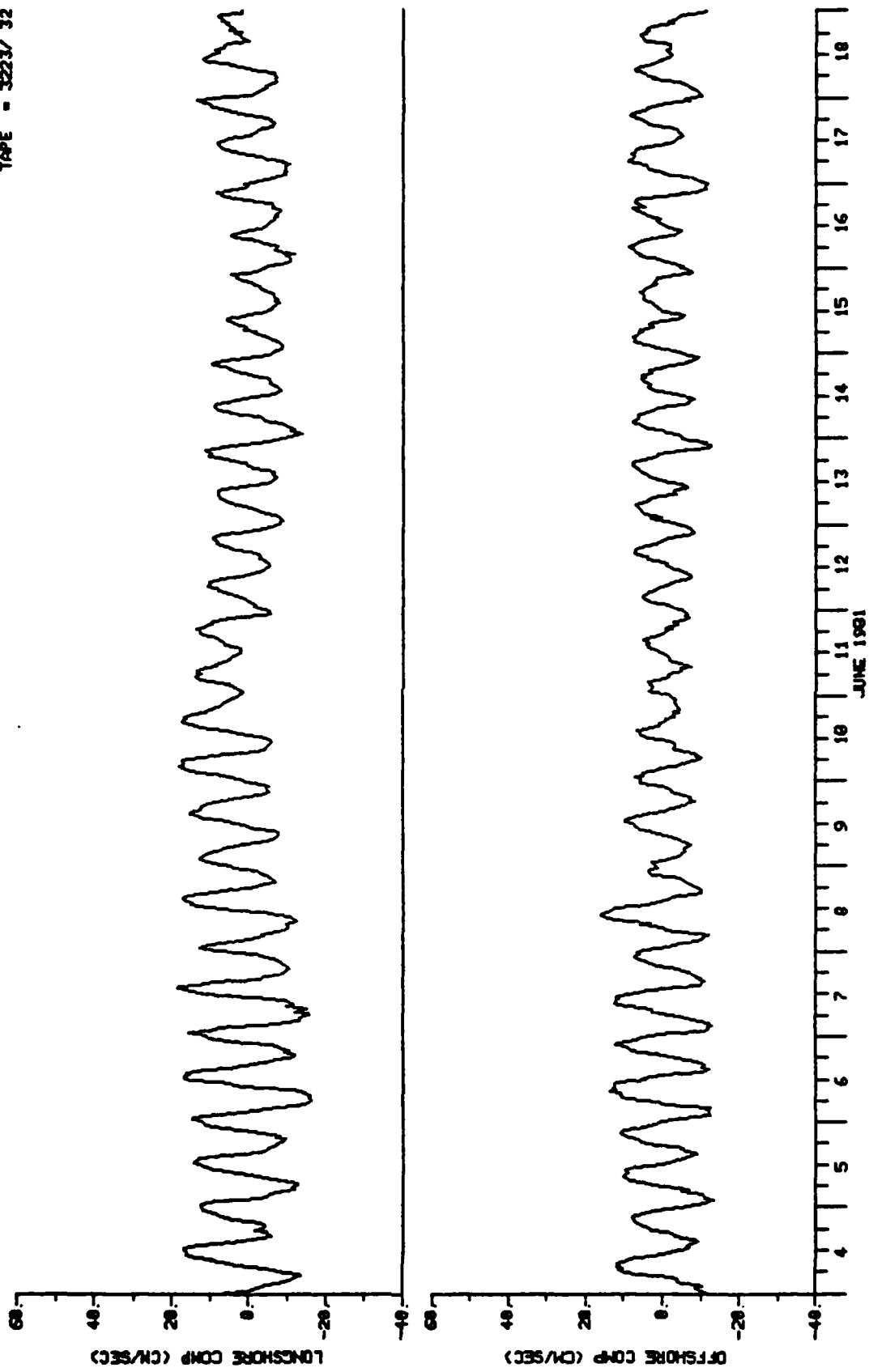
USCG BEAUFORT SEA STUDY

PAGE - 4
STN13 - CH-3
DEPTH - 188
TAPE - 3223/ 32



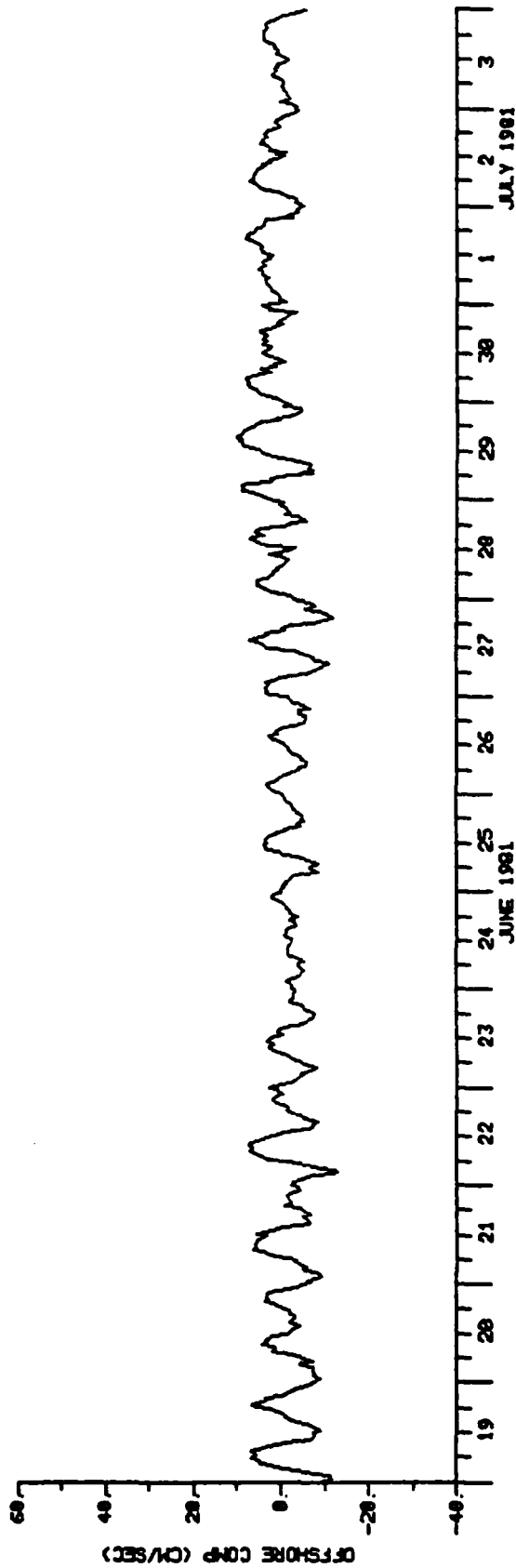
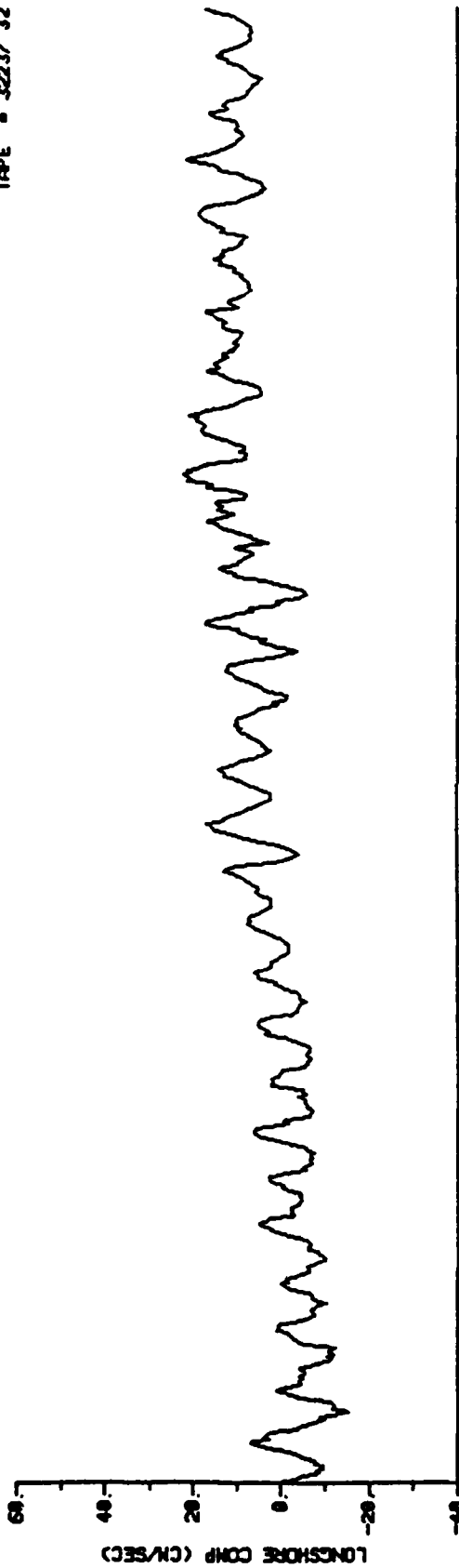
USCG BEAUFORT SEA STUDY

PAGE - 5
STNID - 04-3
DEPTH - 100
TAPE - 3223/ 32



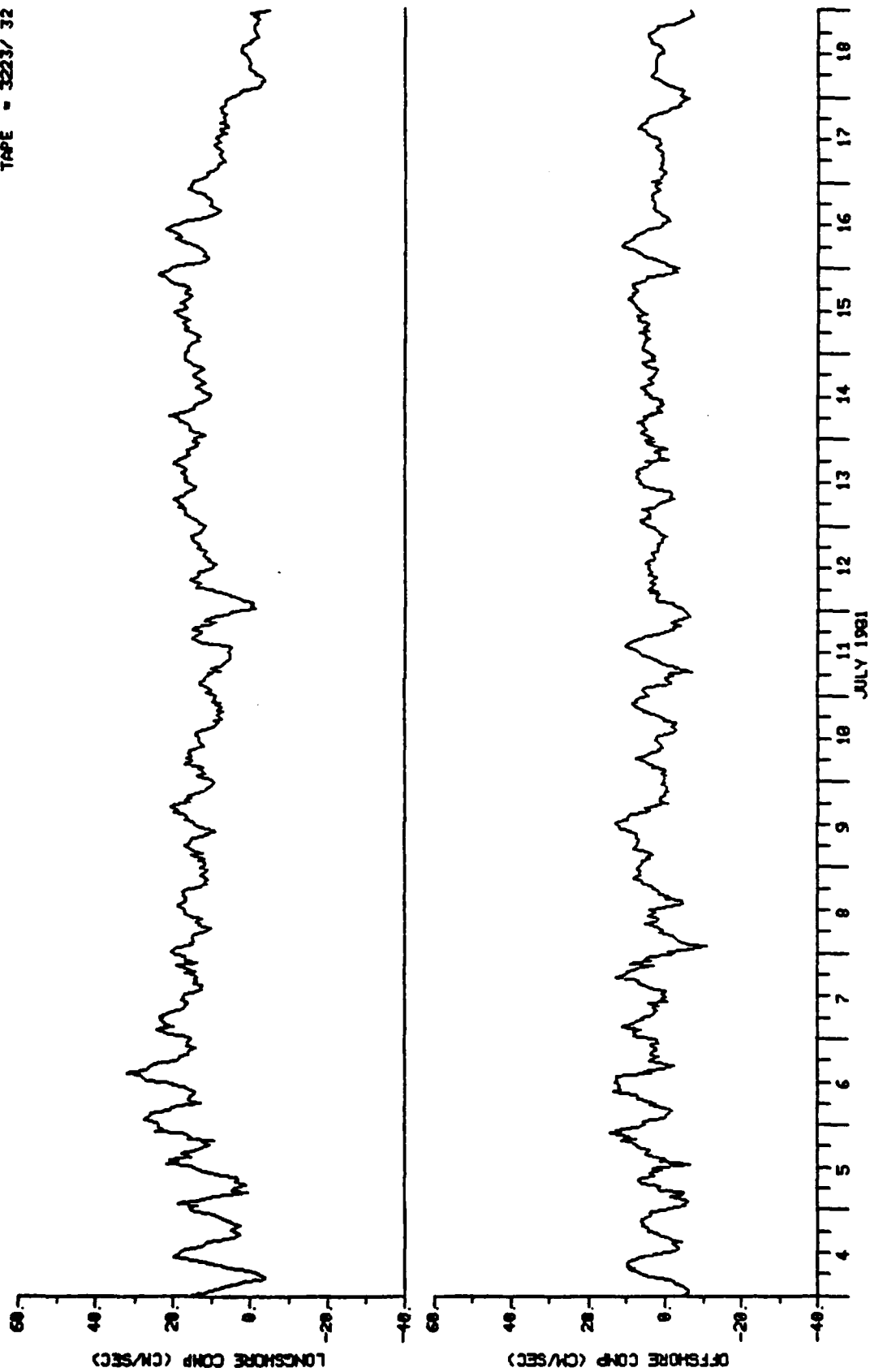
USCG BEAUFORT SEA STUDY

PAGE - 6
STNID - CH-3
DEPTH - 100
TAPE - 3223/ 32



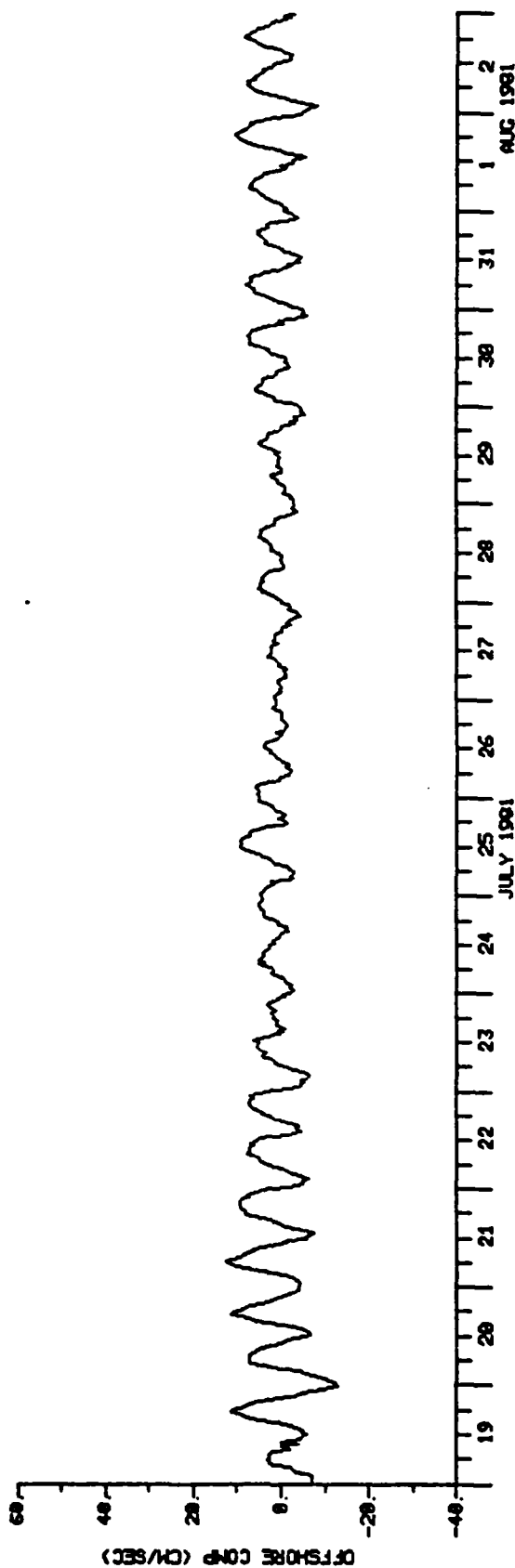
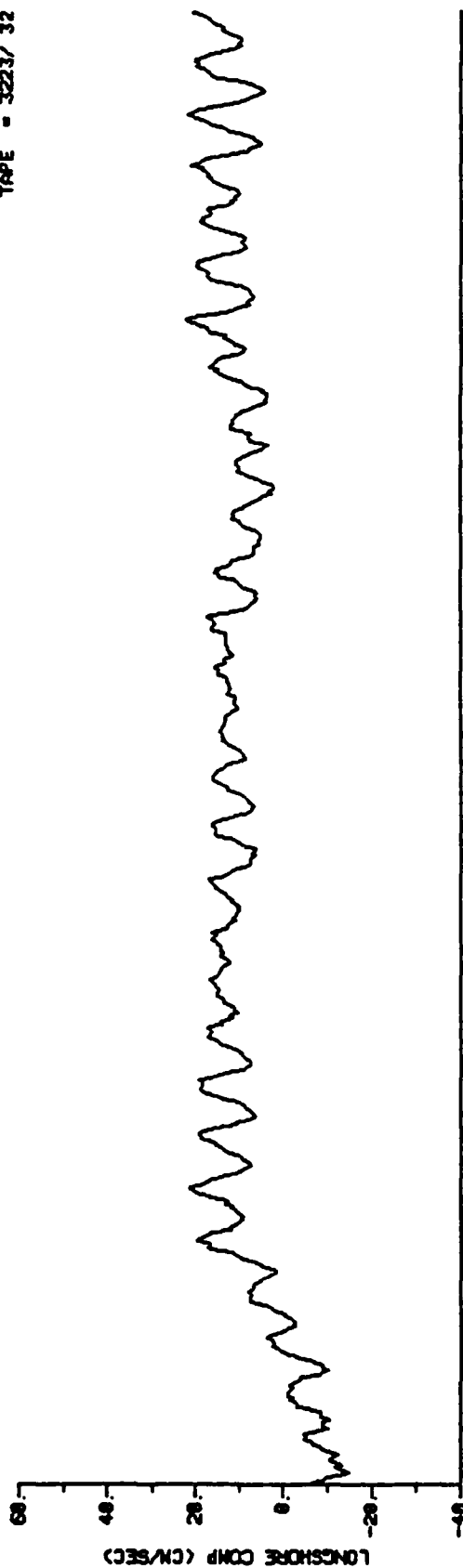
USCG BEAUFORT SEA STUDY

PAGE - 7
STN13 - CH-3
DEPTH - 100
TAPE - 3223/ 32



USCG BEAUFORT SEA STUDY

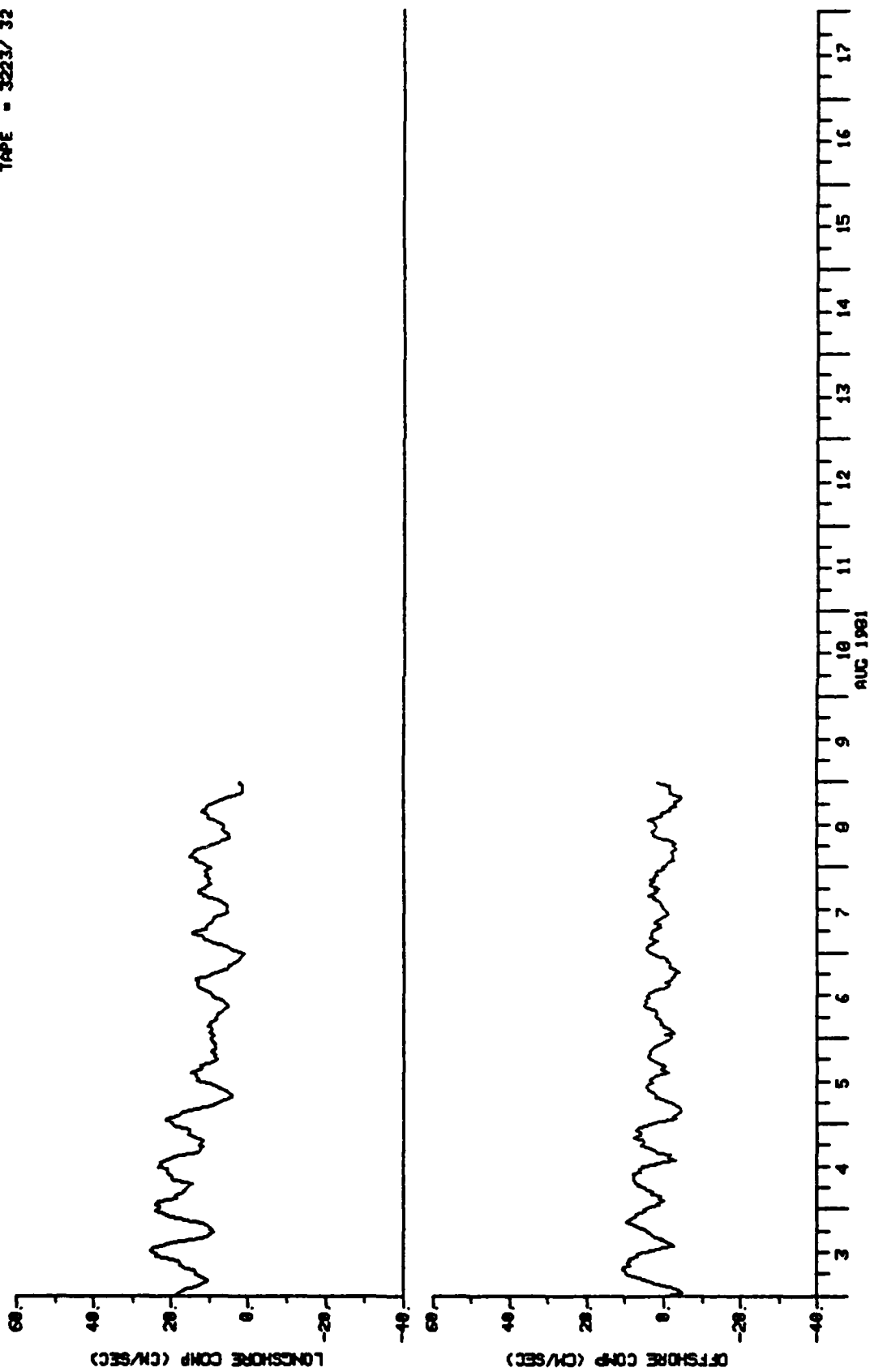
PAGE - 6
STNID - CH-3
DEPTH - 100
TAPE - 3223/32



AUG 1981

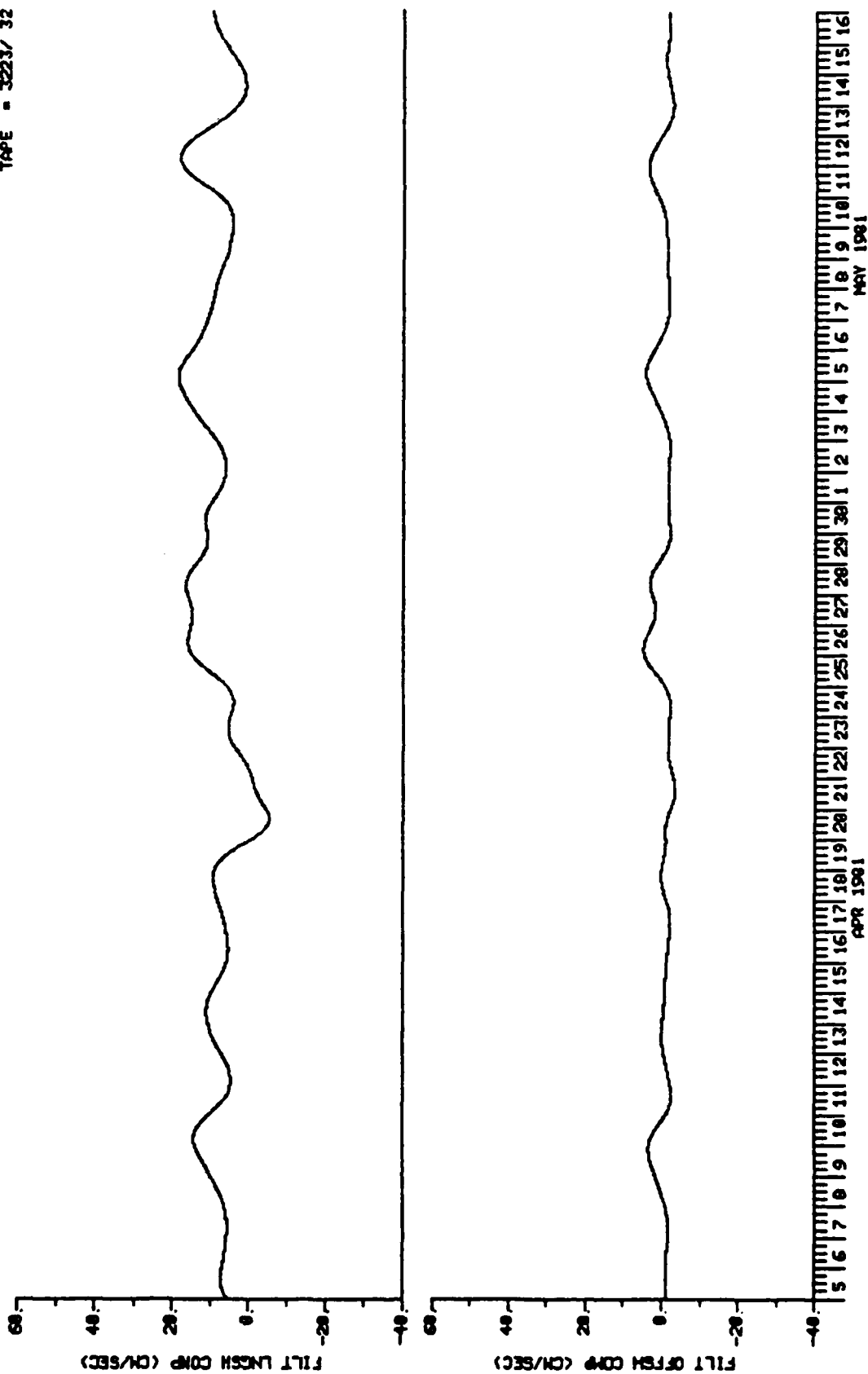
USCG BEAUFORT SEA STUDY

PAGE - 9
STNID - CH-3
DEPTH - 100
TAPE - 3223/ 32



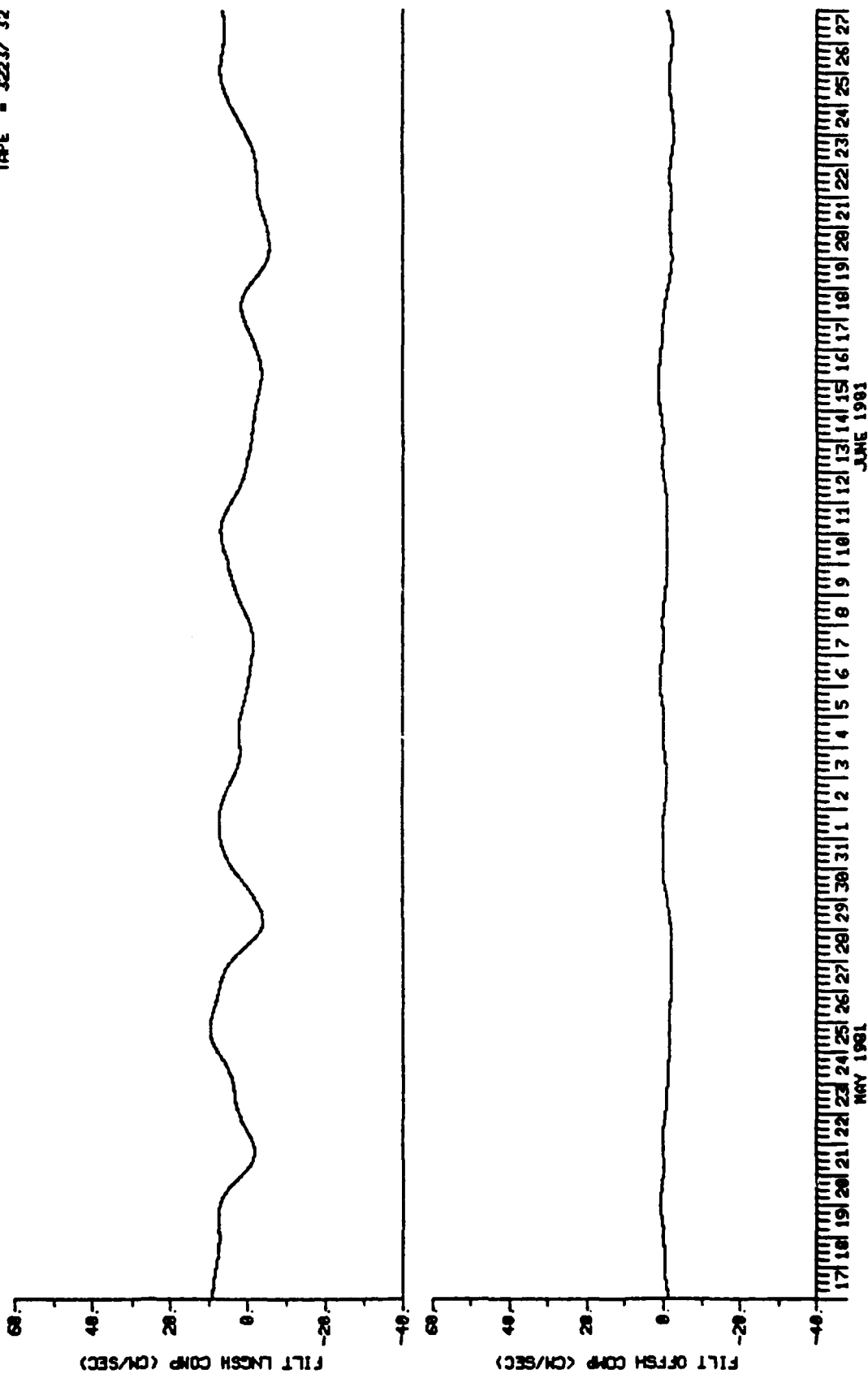
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CH-3
 ELEV - 100
 TAPE - 3223/ 32



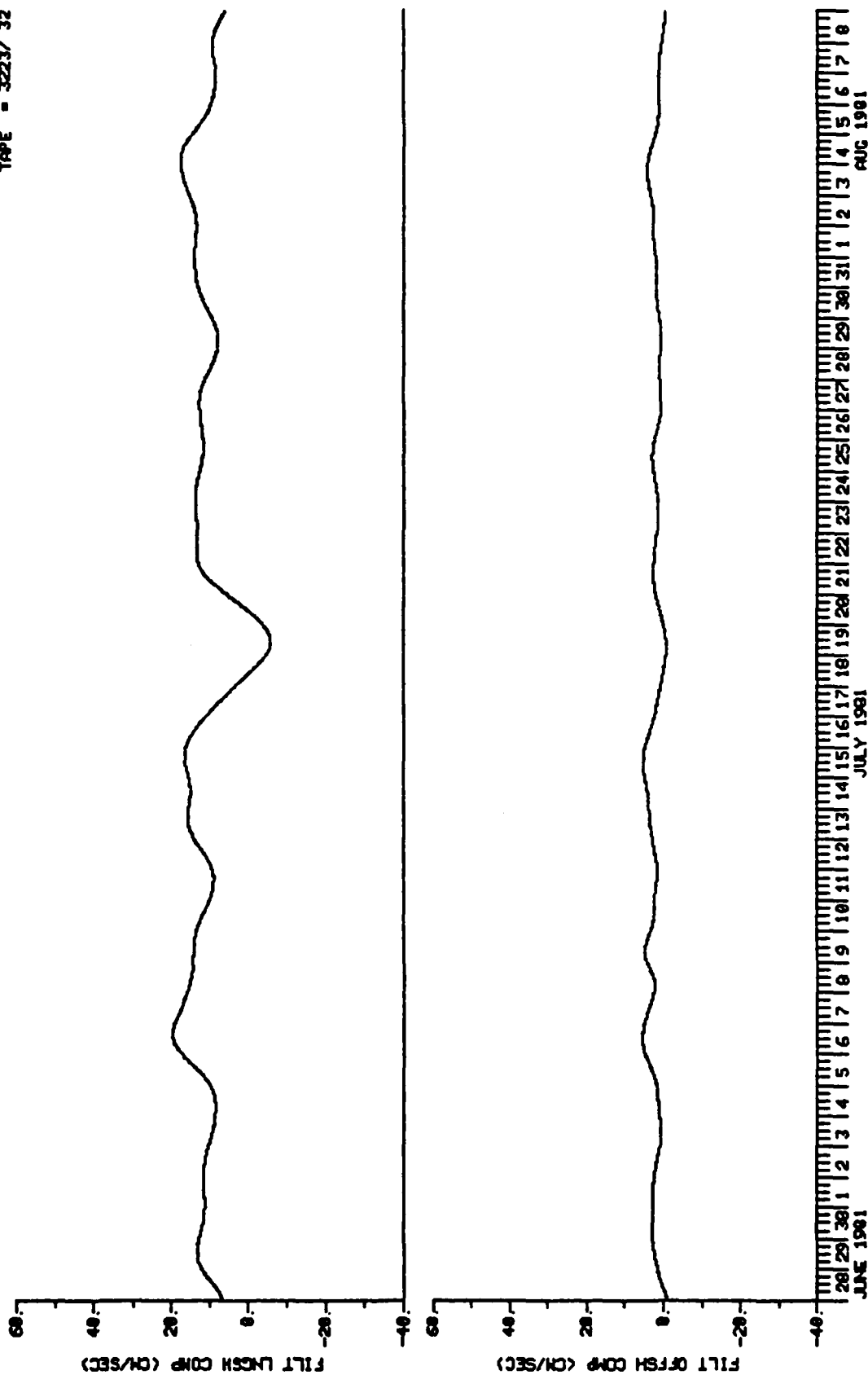
USCG BEAUFORT SEA STUDY

PAGE - 2
 STNID - CH-3
 ELEV - 100
 TAPE - 3223/32



USCG BEAUFORT SEA STUDY

PAGE - 3
 STNID - CH-3
 ELEV - 100
 TAPE - 3223/32



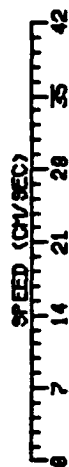
DATA APPENDIX 3

Stick Plots of Coast Guard Current Meter Records
(25 hour Low Pass Filtered)

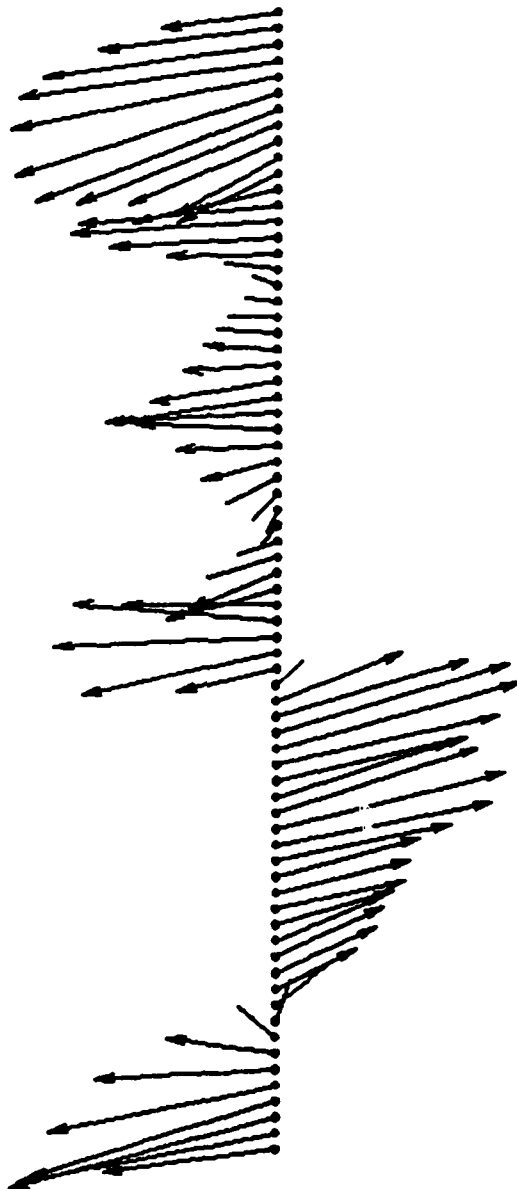
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-12

PAGE 1



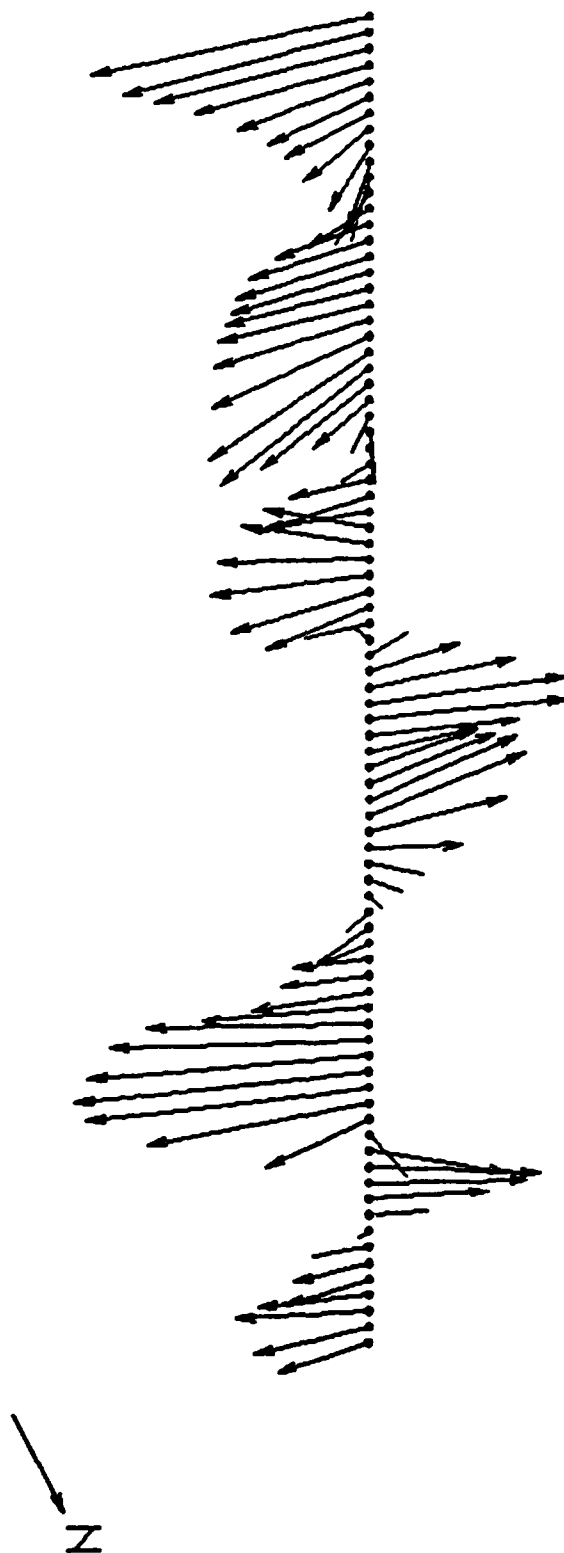
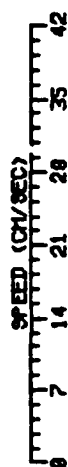
N
↙



USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-12

PAGE 2



17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

MAY 1981

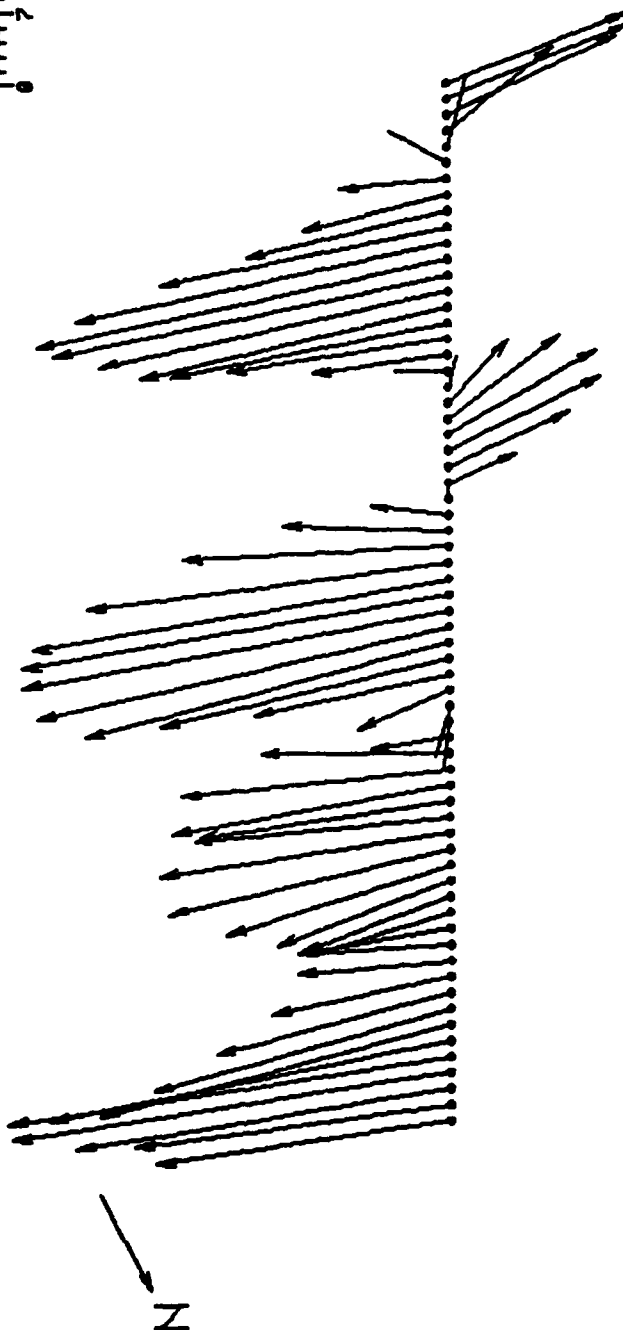
JUNE 1981

USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-12

SPEED (CM/SEC)

0 7 14 21 28 35 42



28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8

JUNE 1991

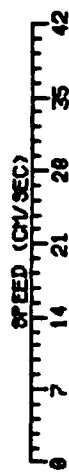
JULY 1991

AUG 1991

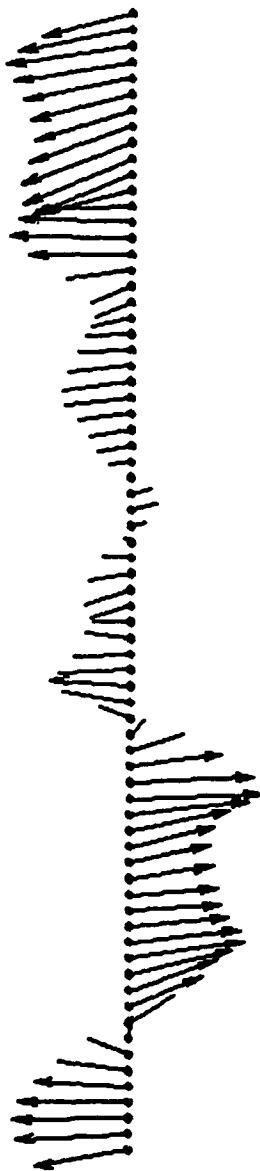
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-11

PAGE 1



N
↙

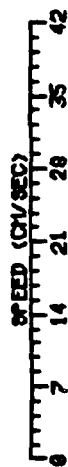


15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
APR 1981 MAY 1981

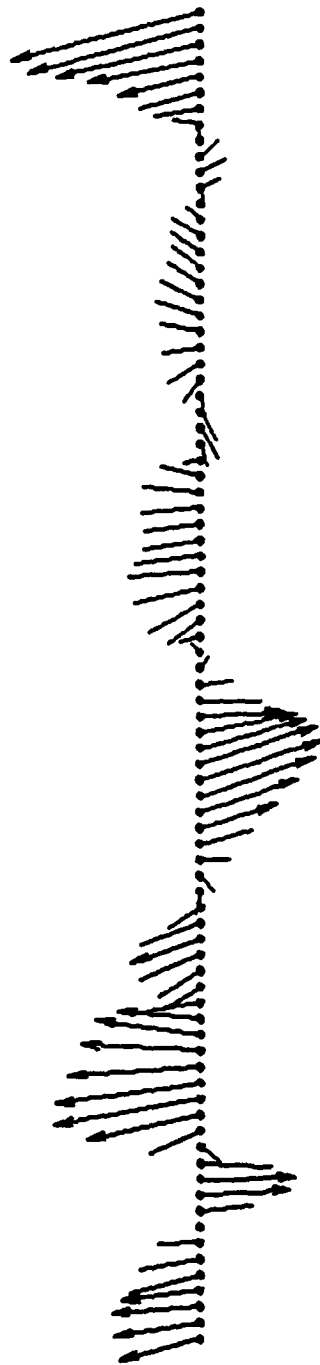
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-11

PAGE 2



N
↙



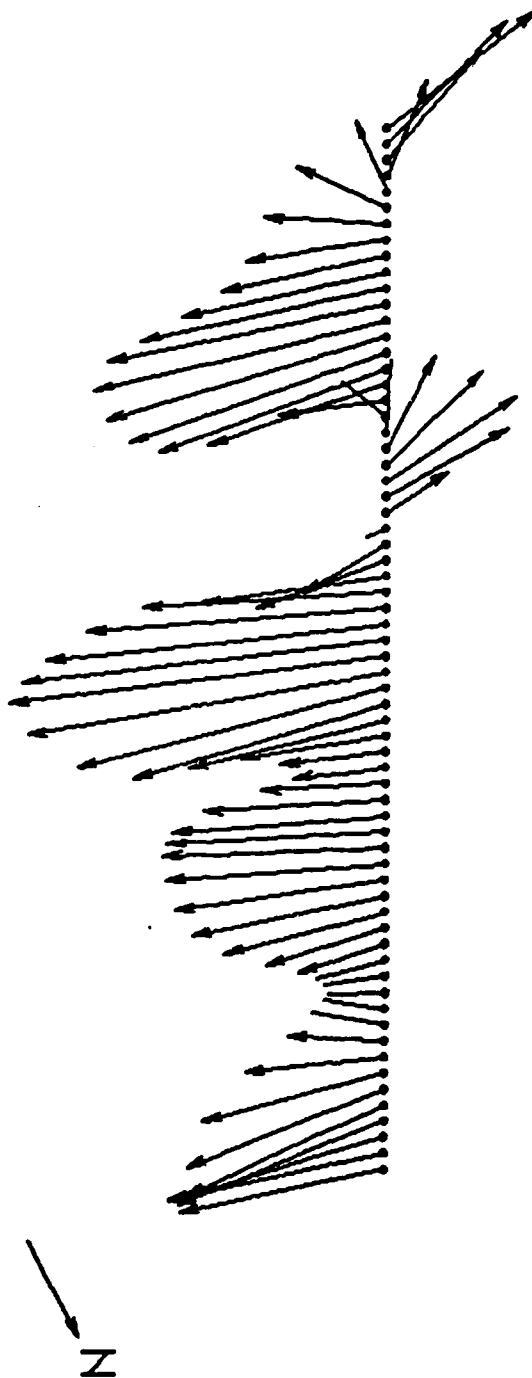
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-11

PAGE 3

SPEED (CM/SEC)

0 7 14 21 28 35 42



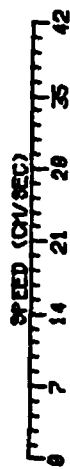
28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8

JUNE 1981 JULY 1981 AUG 1981

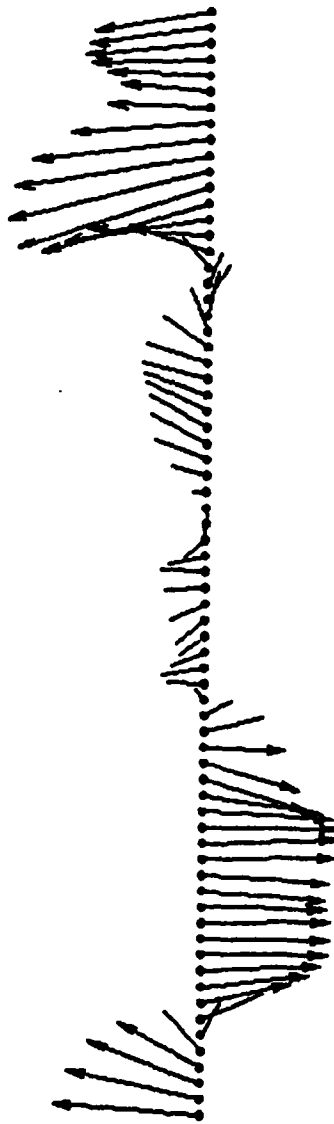
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-21

PAGE 1



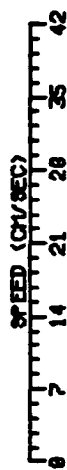
N
↙



USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-21

PAGE 2



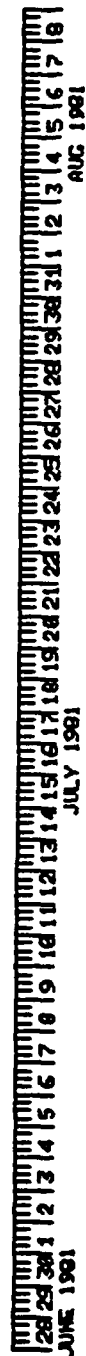
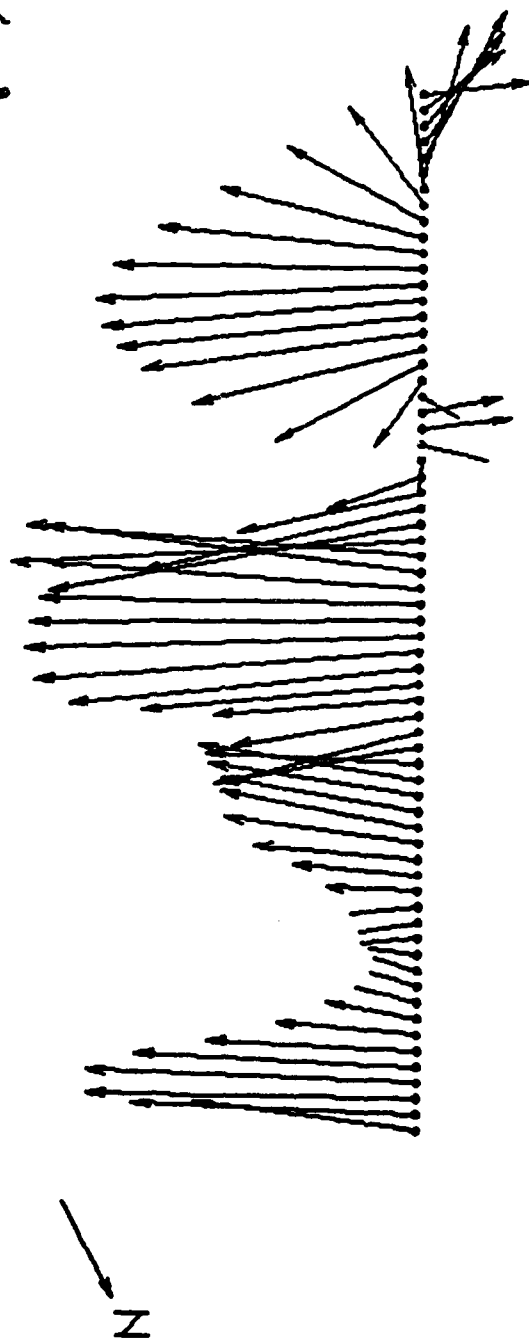
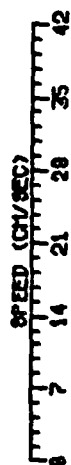
N
↙



USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-21

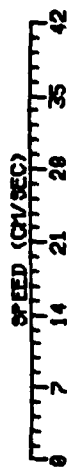
PAGE 3



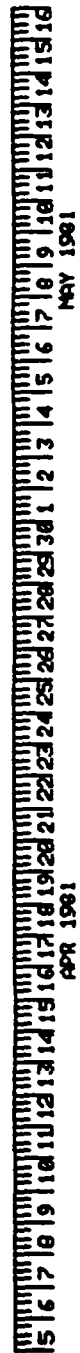
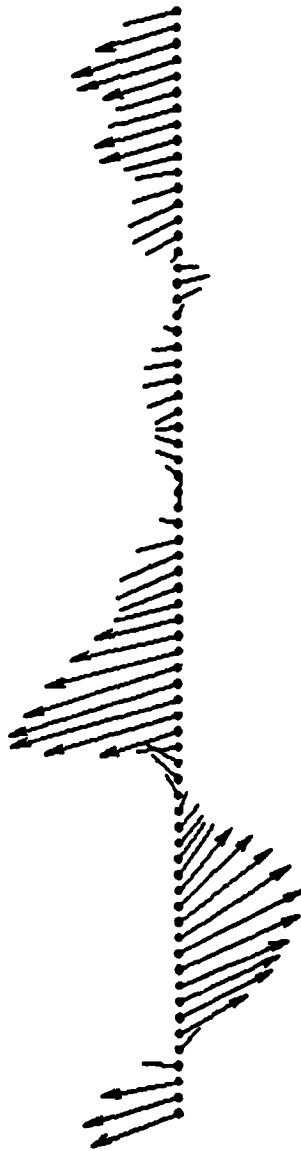
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-22

PAGE 1



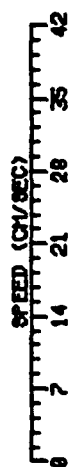
N
↙



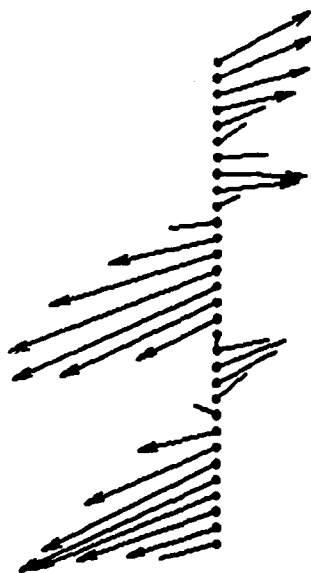
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-22

PAGE 2



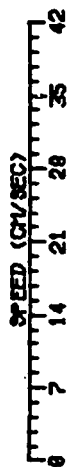
N
↙



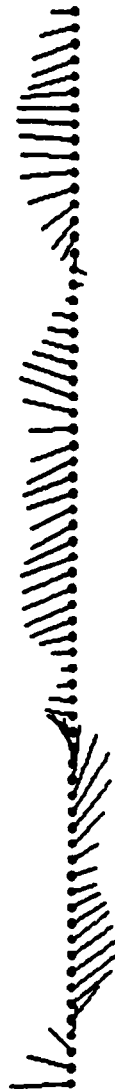
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-32

PAGE 1



N



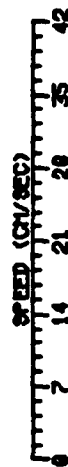
MAY 1961

APR 1961

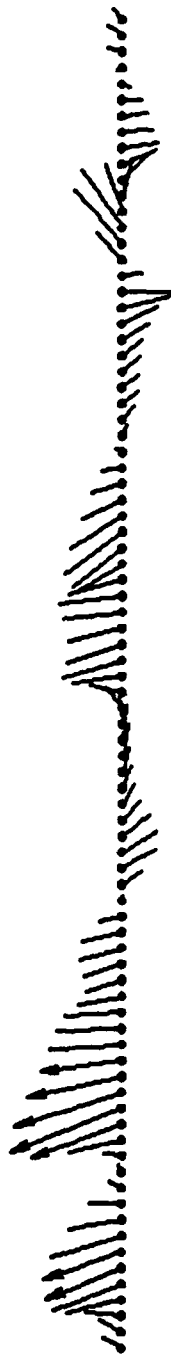
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-32

PAGE 2



N
↙

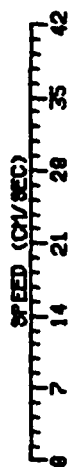


17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
MAY 1981 JUNE 1981

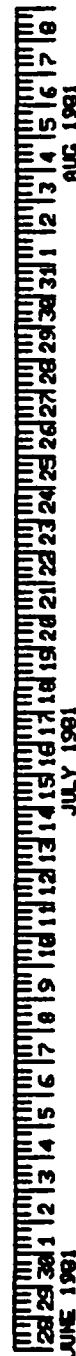
USCG BEAUFORT SEA STUDY

STICKS PLOT OF FILTERED VELOCITY COMPONENTS FOR METER CG-32

PAGE 3



N
↙

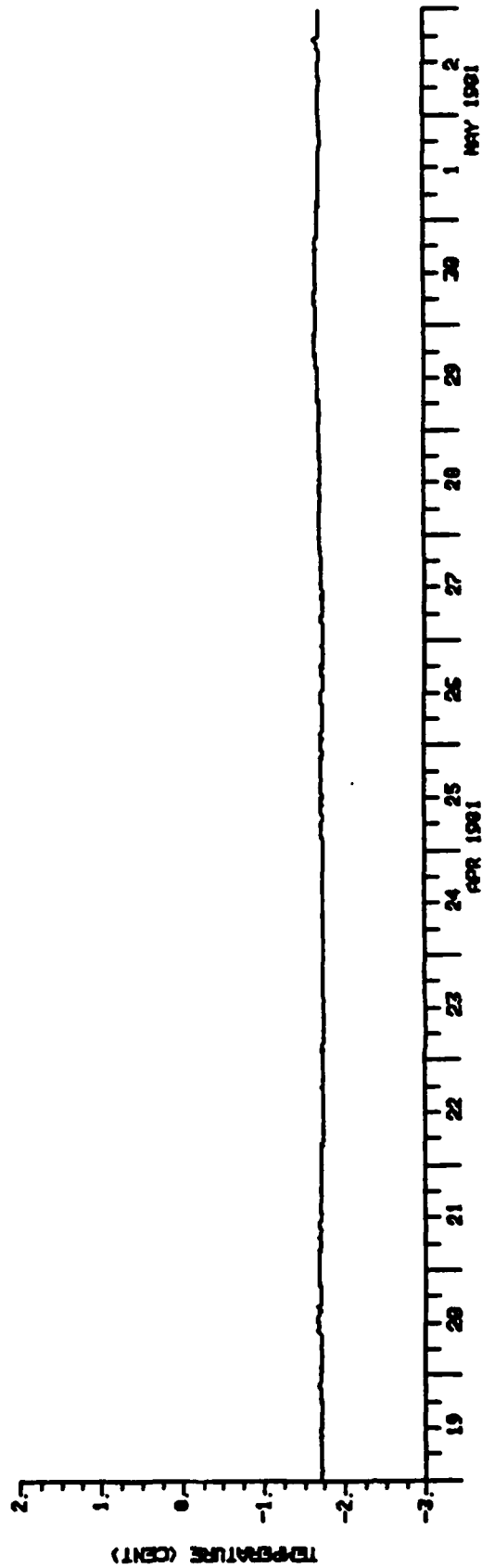
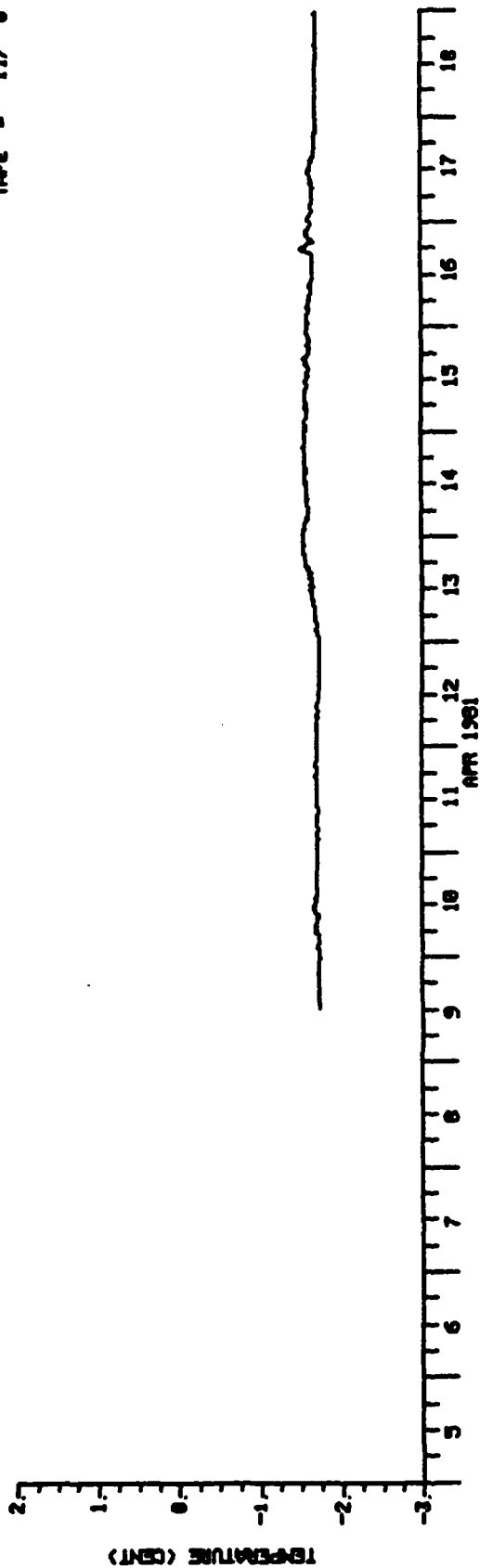


DATA APPENDIX 4

Time Series Plots of Temperatures at
Coast Guard Current Meters

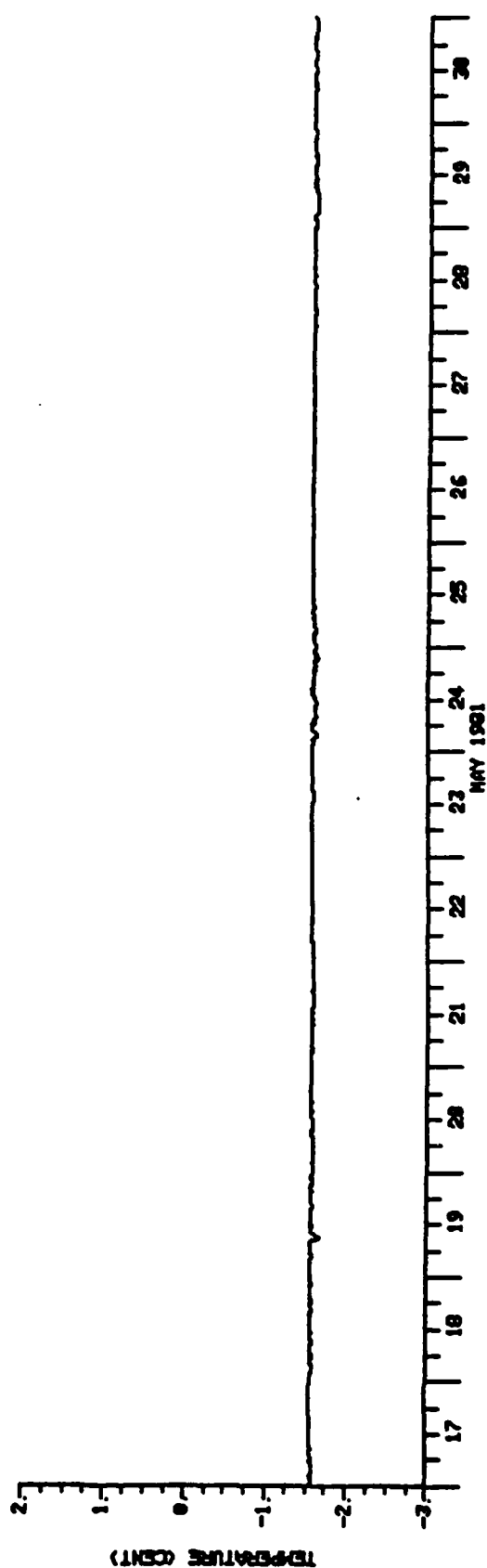
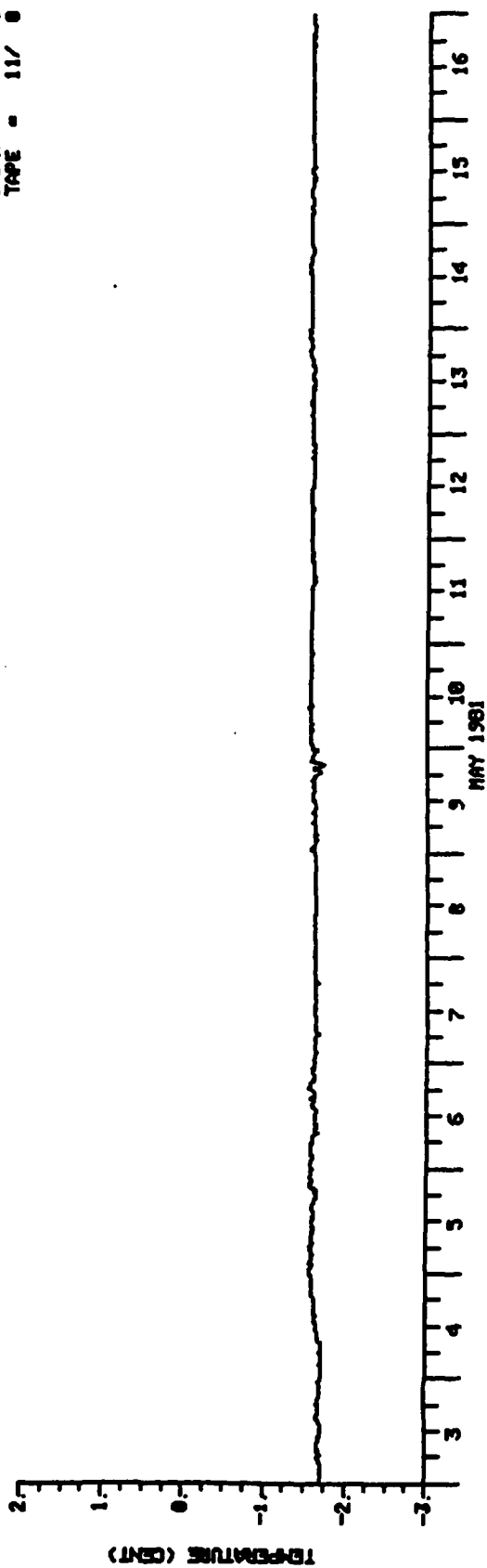
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CO-1
 DEPTH - 40
 TAPE - 11/ 0



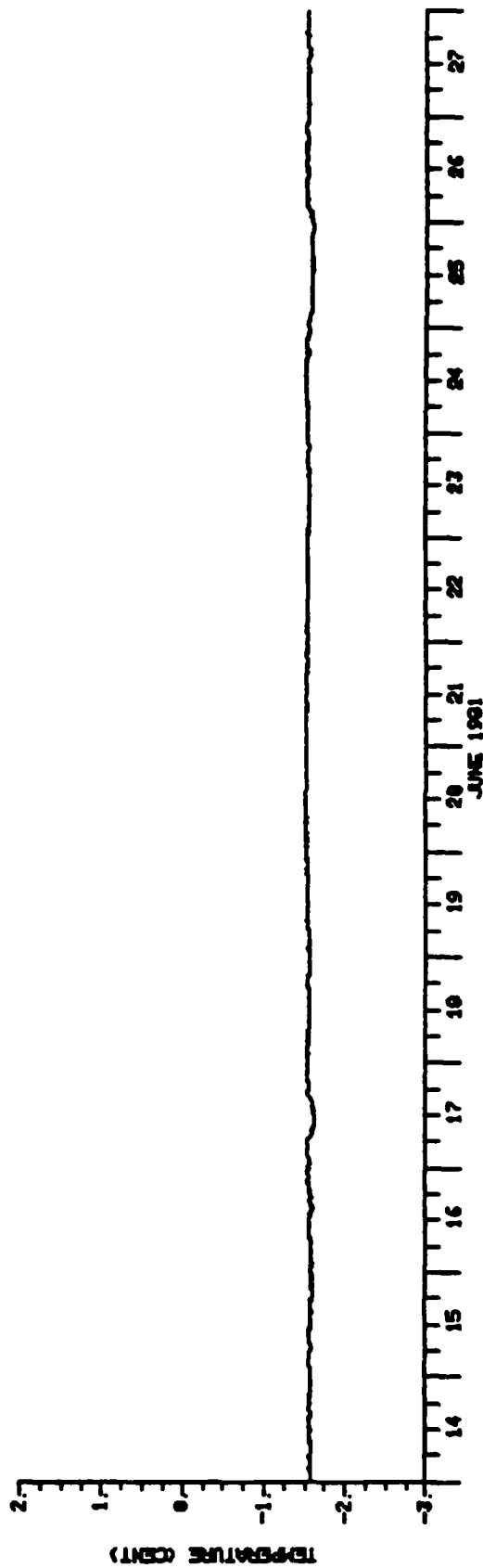
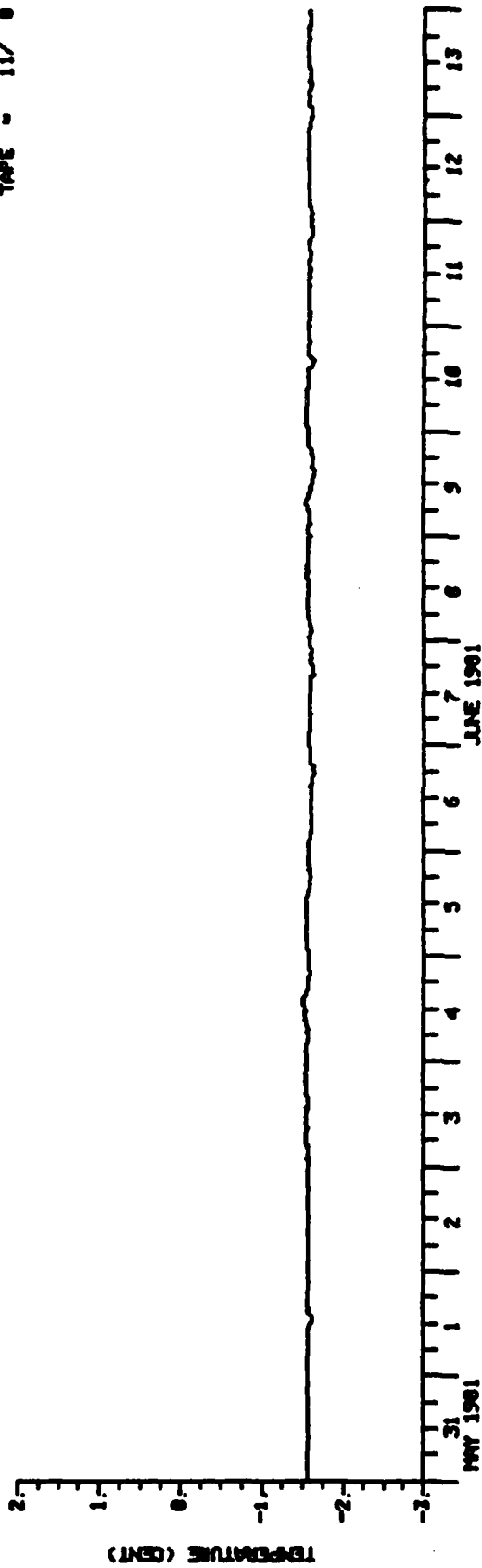
USCG BEAUFORT SEA STUDY

PAGE - 2
 STATION - 00-1
 DEPTH - 40
 DATE - 11/ 0



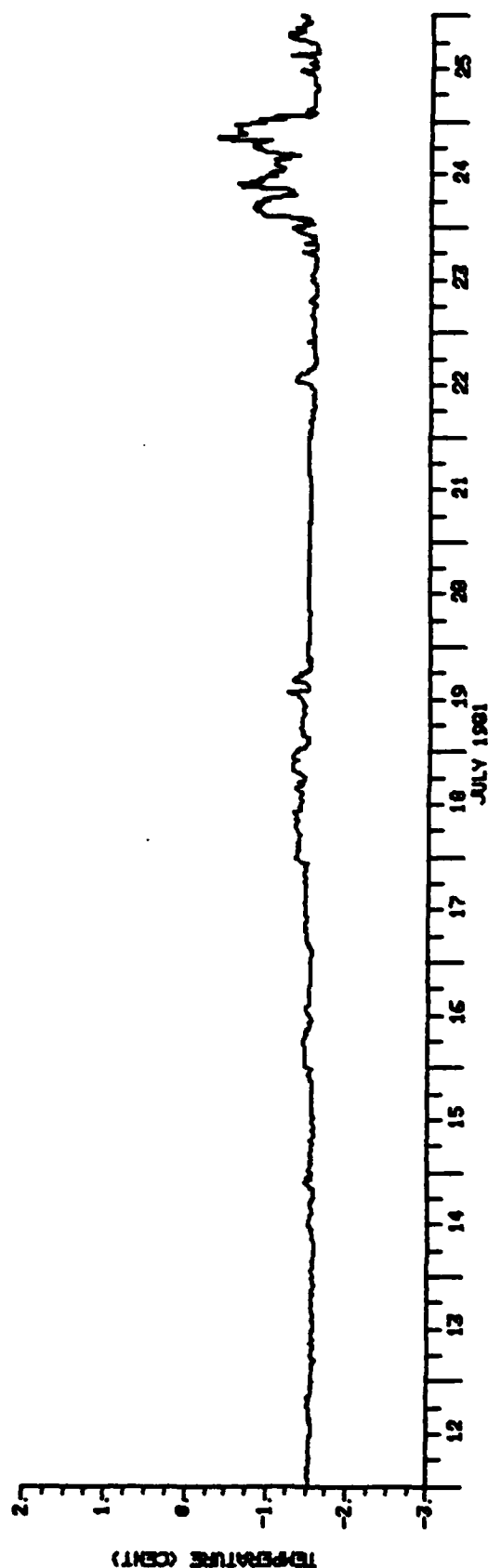
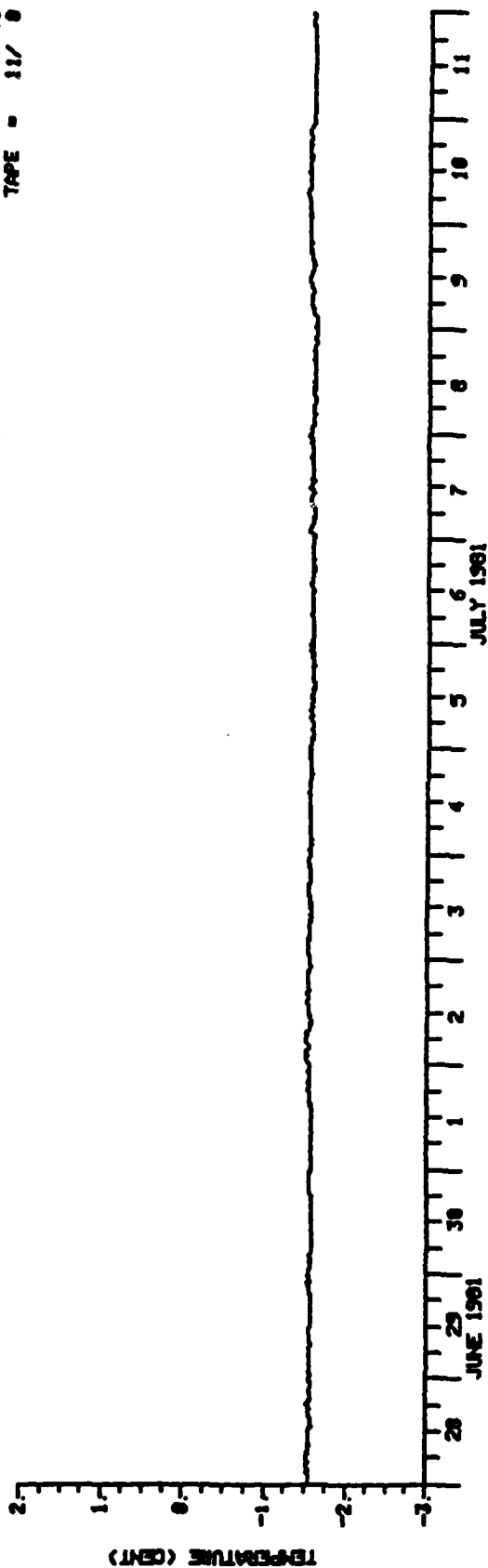
USCG BEAUFORT SEA STUDY

PAGE = 3
 STATION = CD-1
 DEPTH = 40
 TAPE = 11/0



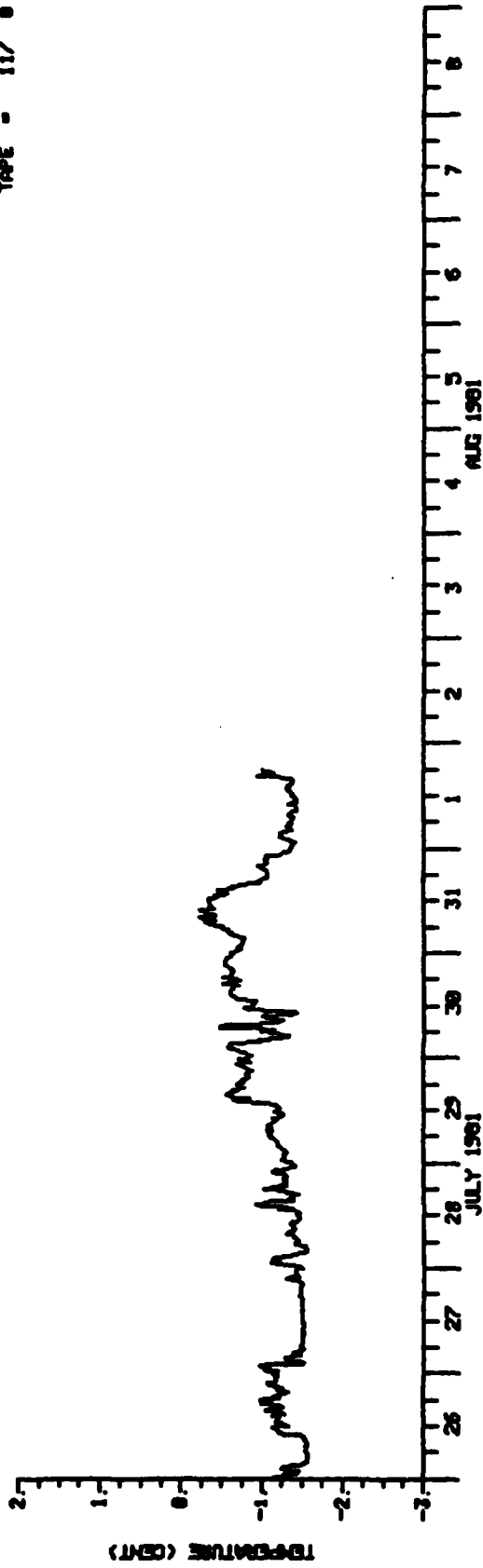
USCG BEAUFORT SEA STUDY

PAGE - 4
STN13 - CD-1
DEPTH - 40
TAPE - 11/0



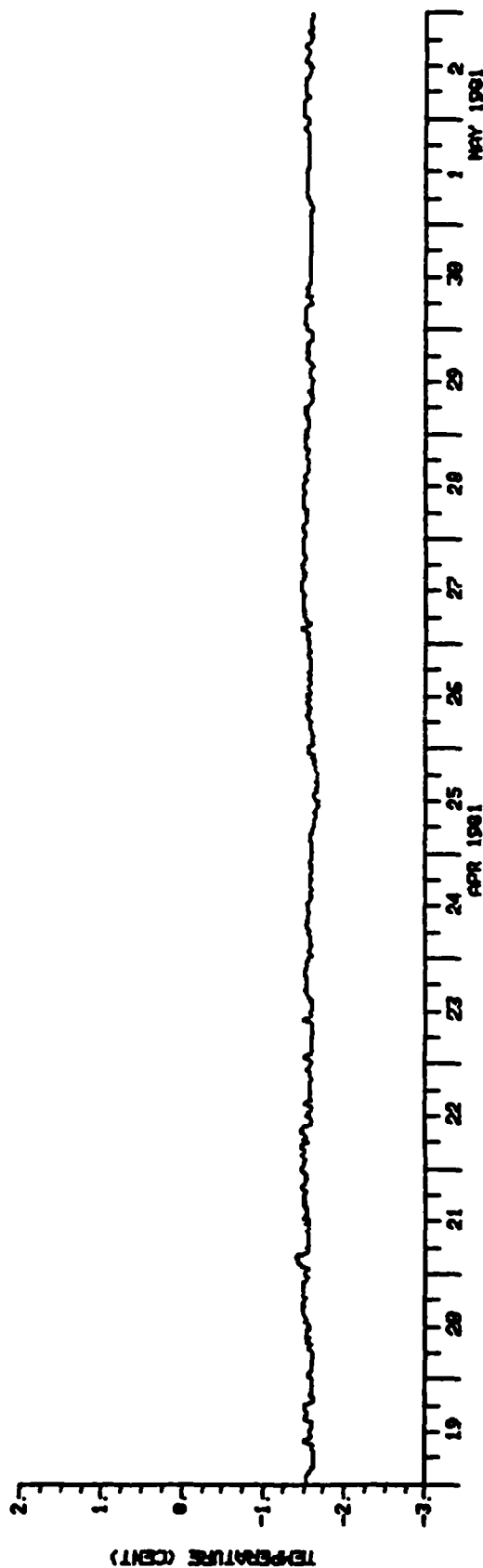
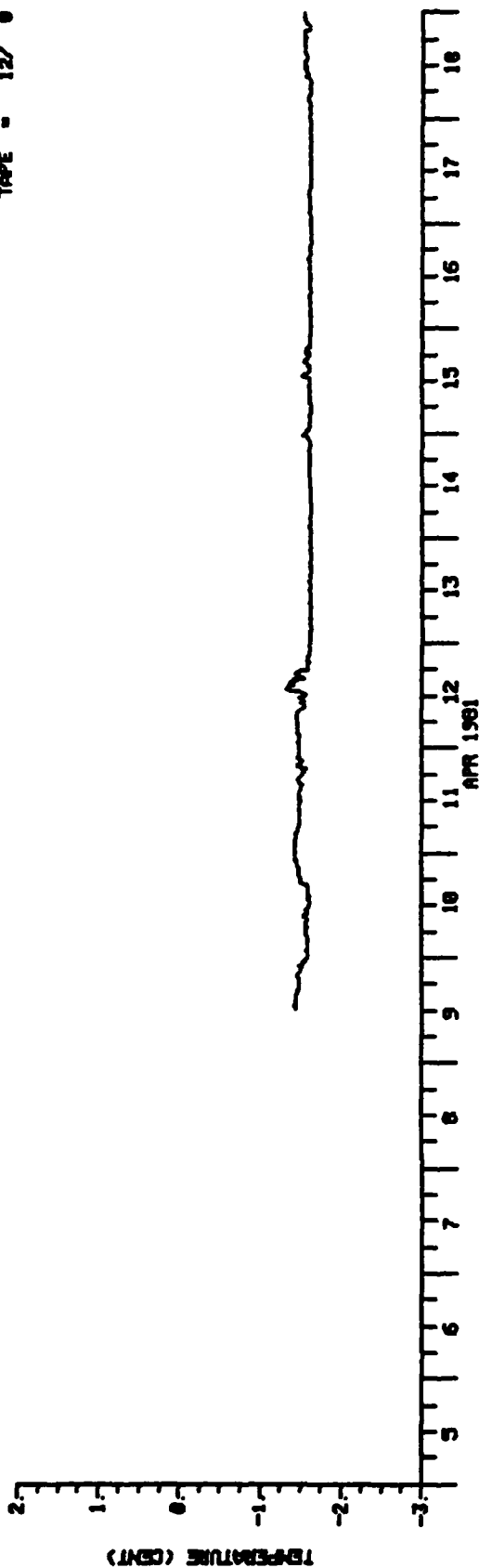
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - CO-1
DEPTH - 40
TAPE - 11/ 8



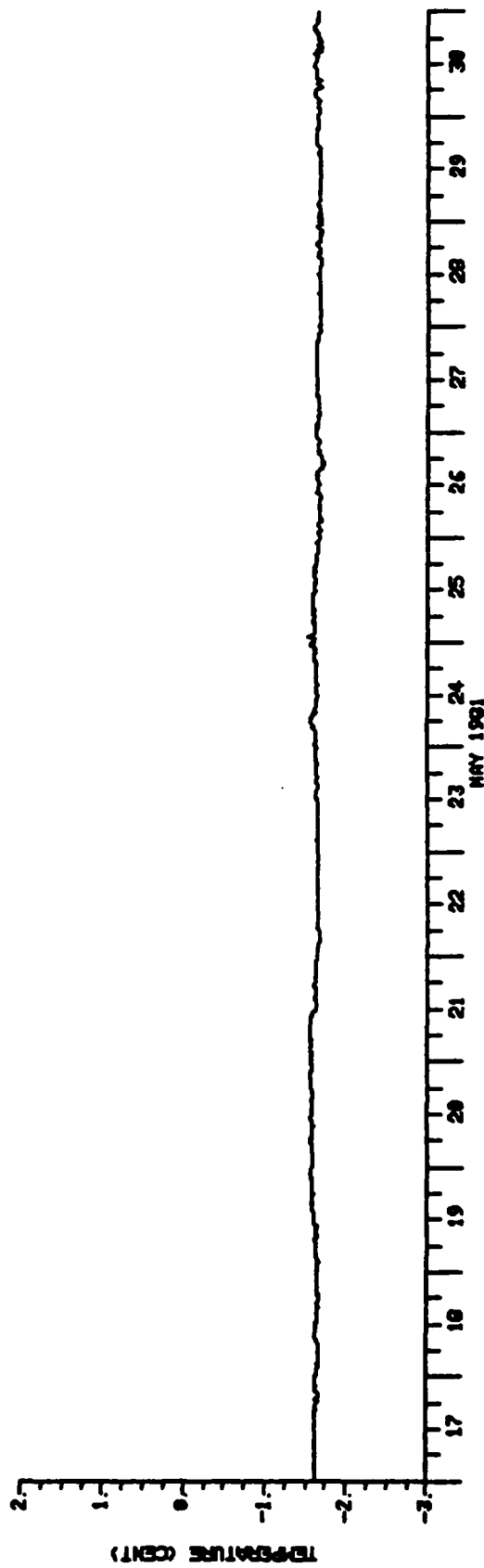
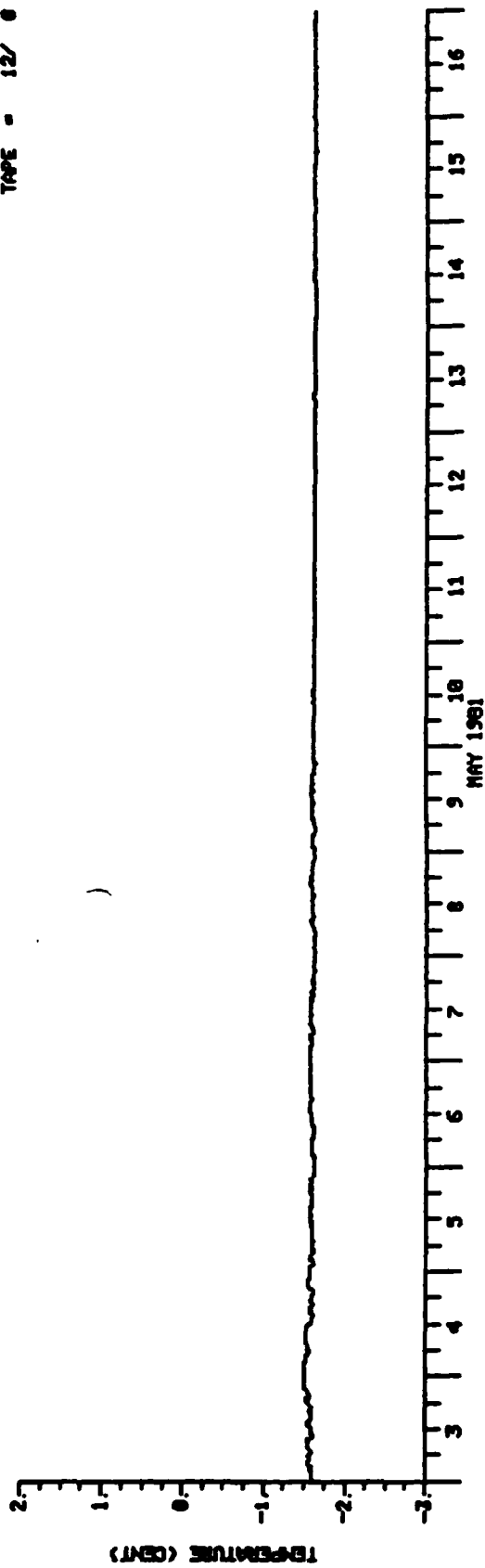
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CO-1
 DEPTH - 150
 TAPE - 12/0



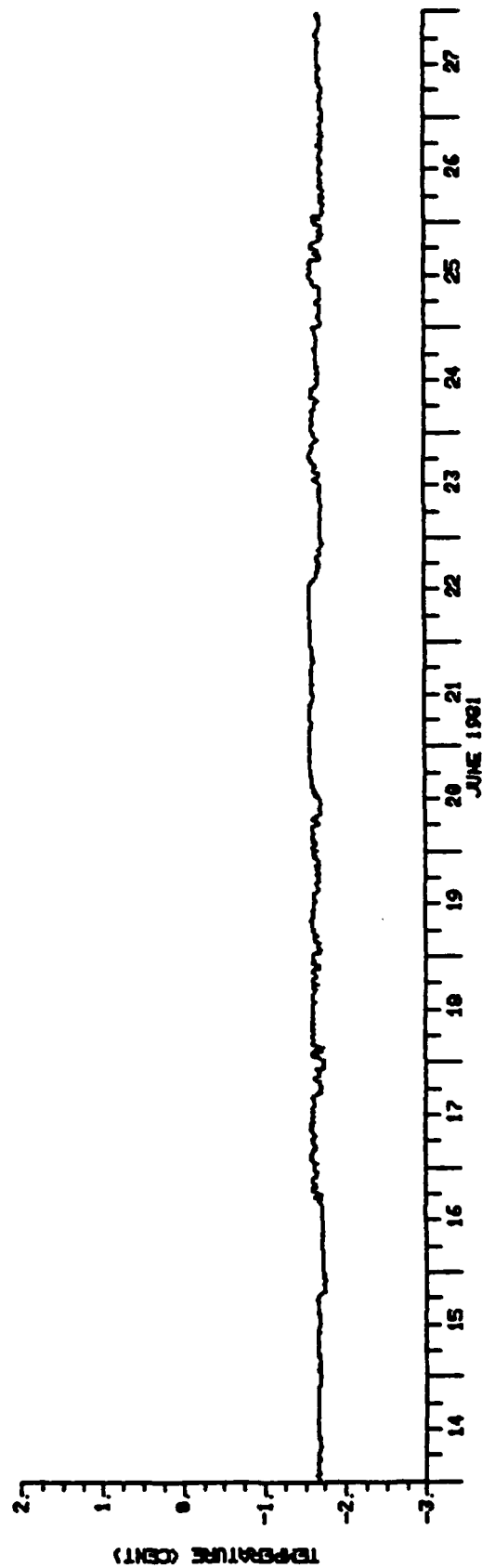
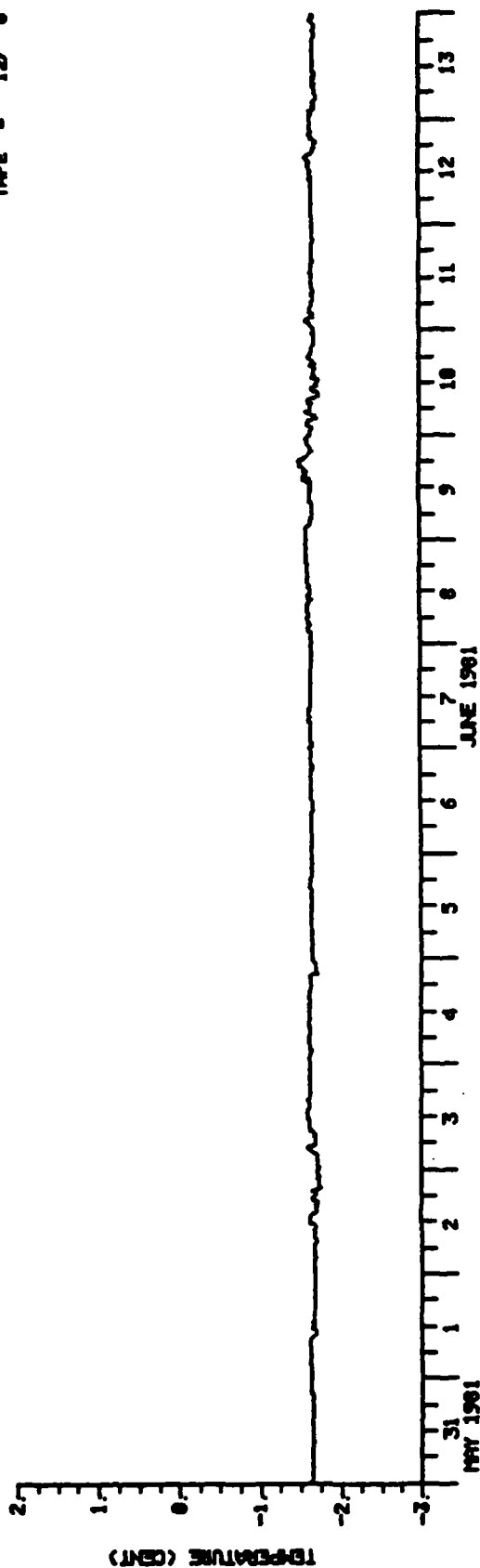
USCG BEAUFORT SEA STUDY

PAGE - 2
STN19 - CO-1
DEPTH - 150
TAPE - 12/ 0



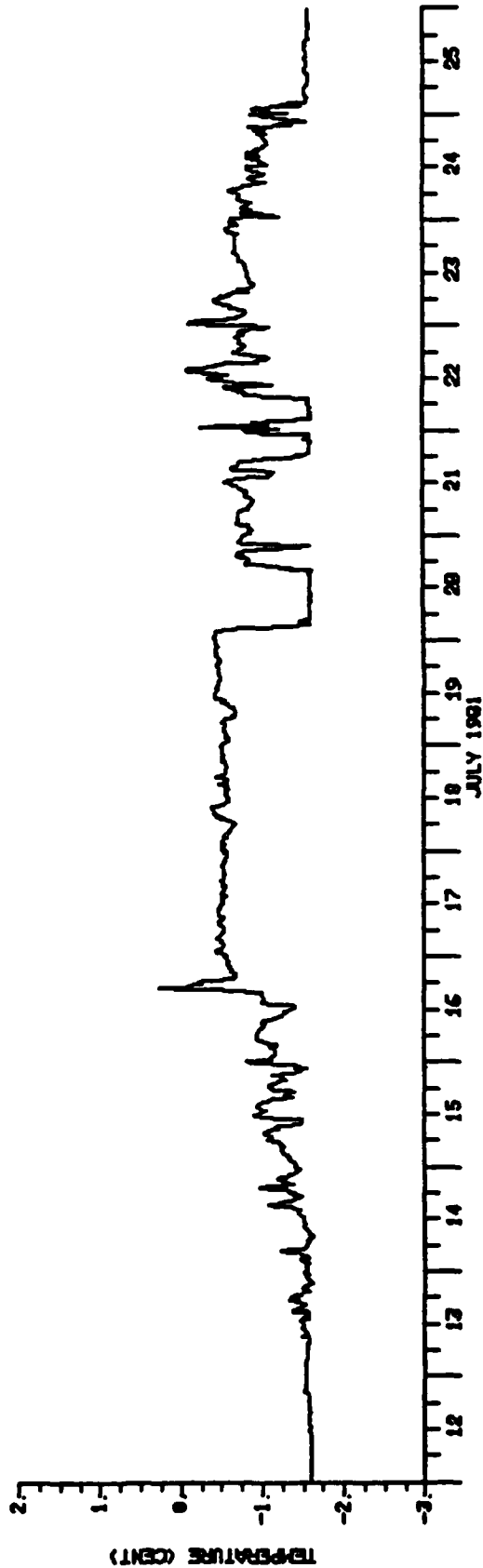
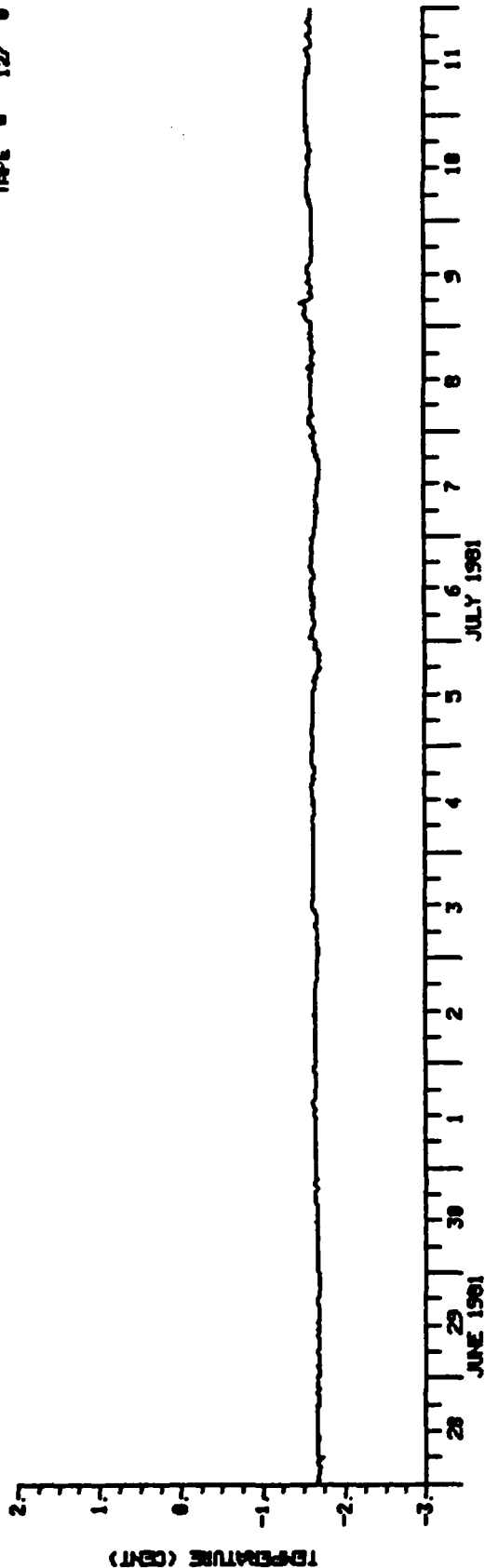
USCG BEAUFORT SEA STUDY

PAGE = 3
 STNID = CO-1
 DEPTH = 150
 TAPE = 12/0



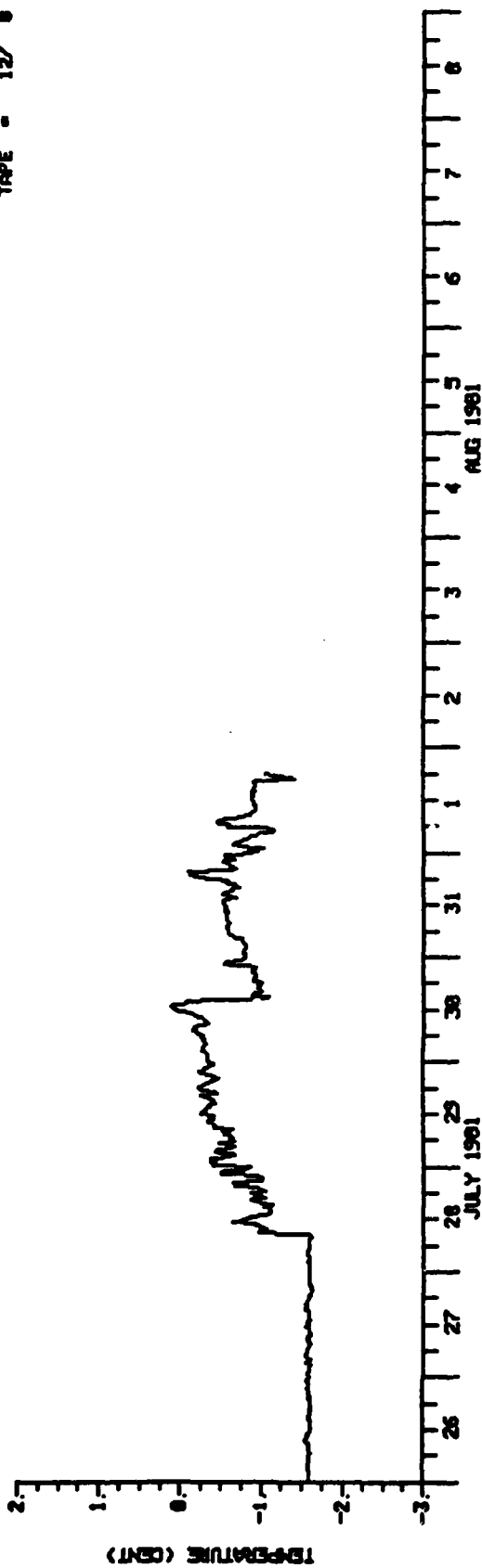
USCG BEAUFORT SEA STUDY

PAGE - 4
 STATION - CO-1
 DEPTH - 150
 TAPE - 12/ 0



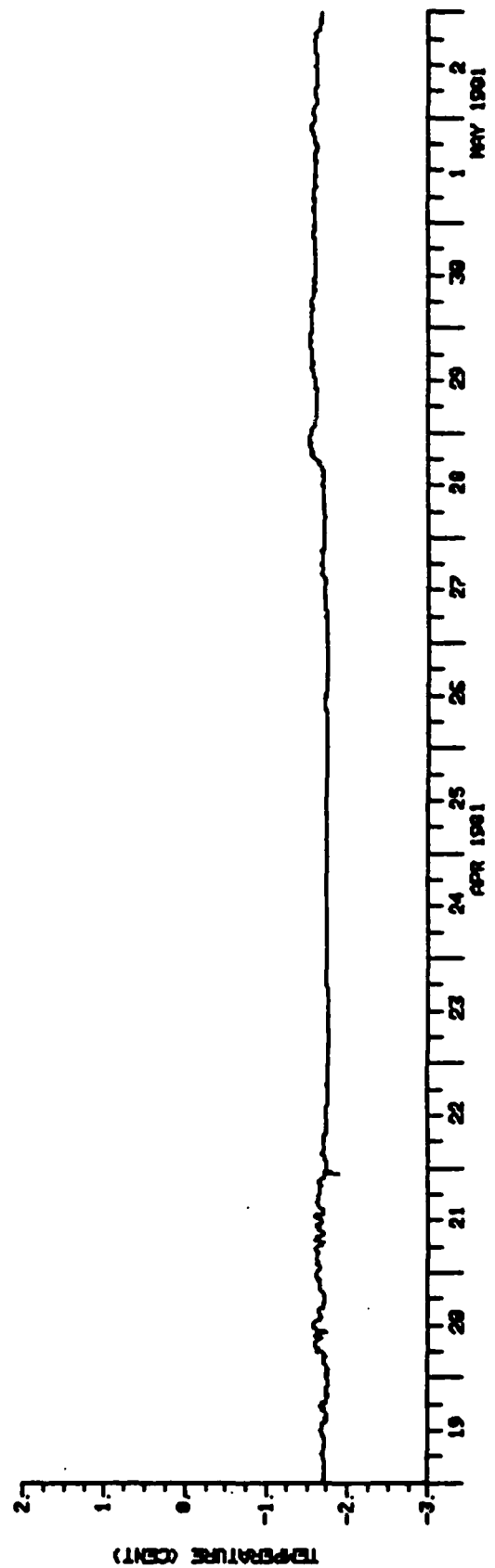
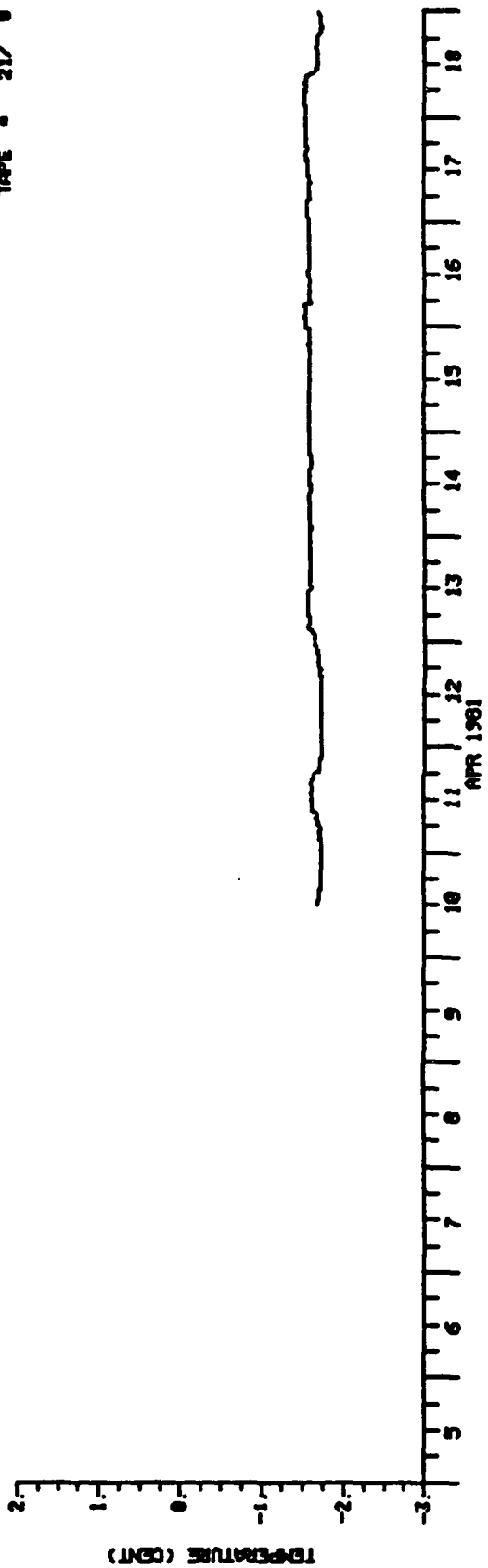
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - CO-1
DEPTH - 150
TAPE - 12/ 0



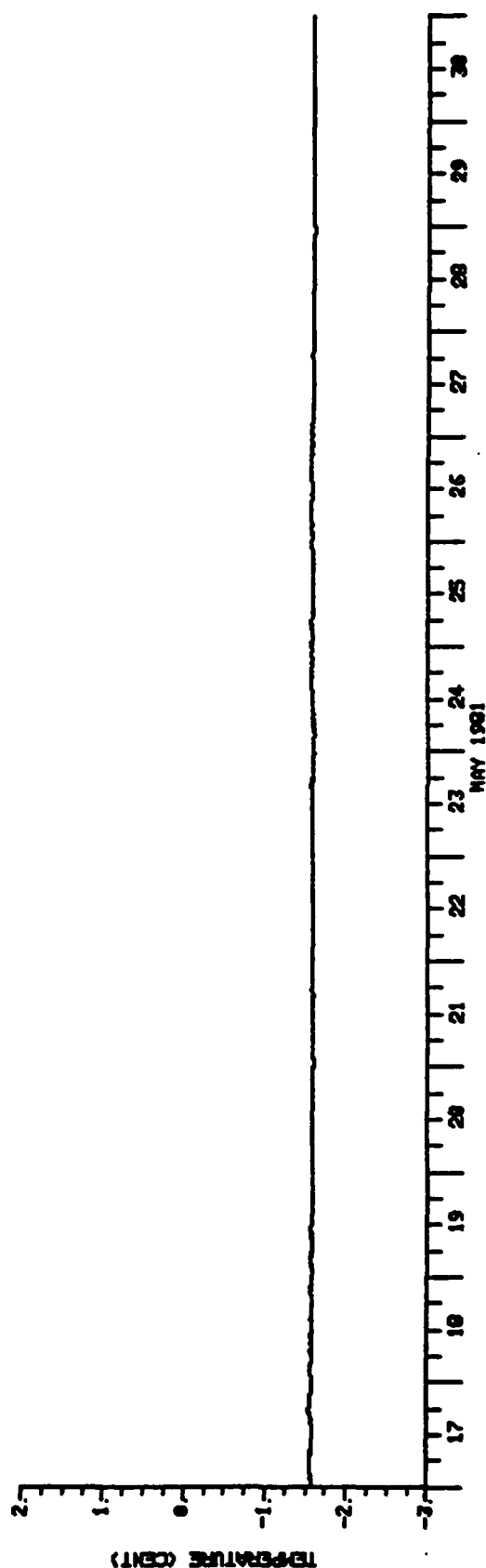
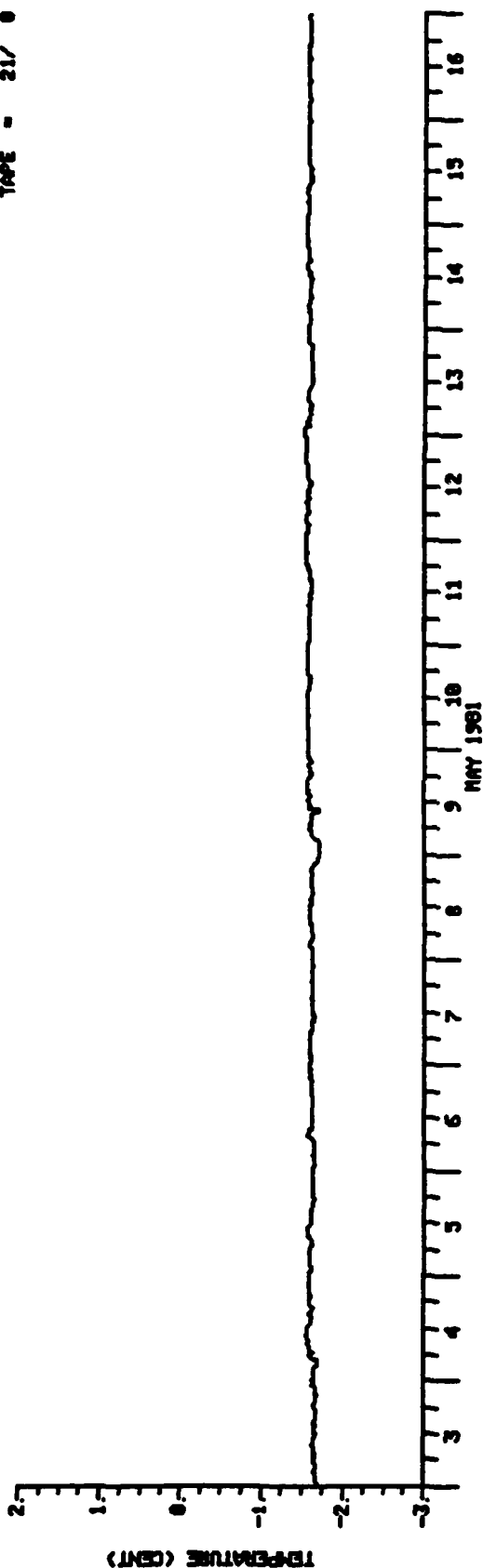
USCG BEAUFORT SEA STUDY

PAGE - 1
STATION - CO-2
DEPTH - 48
TAPE - 21/ 8



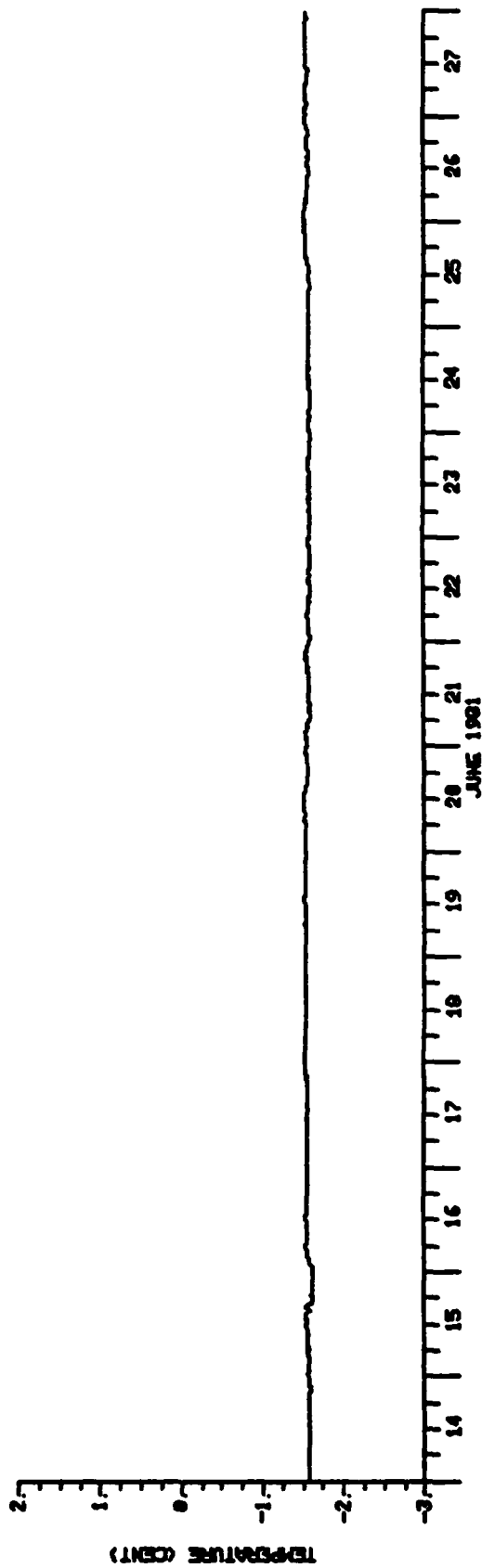
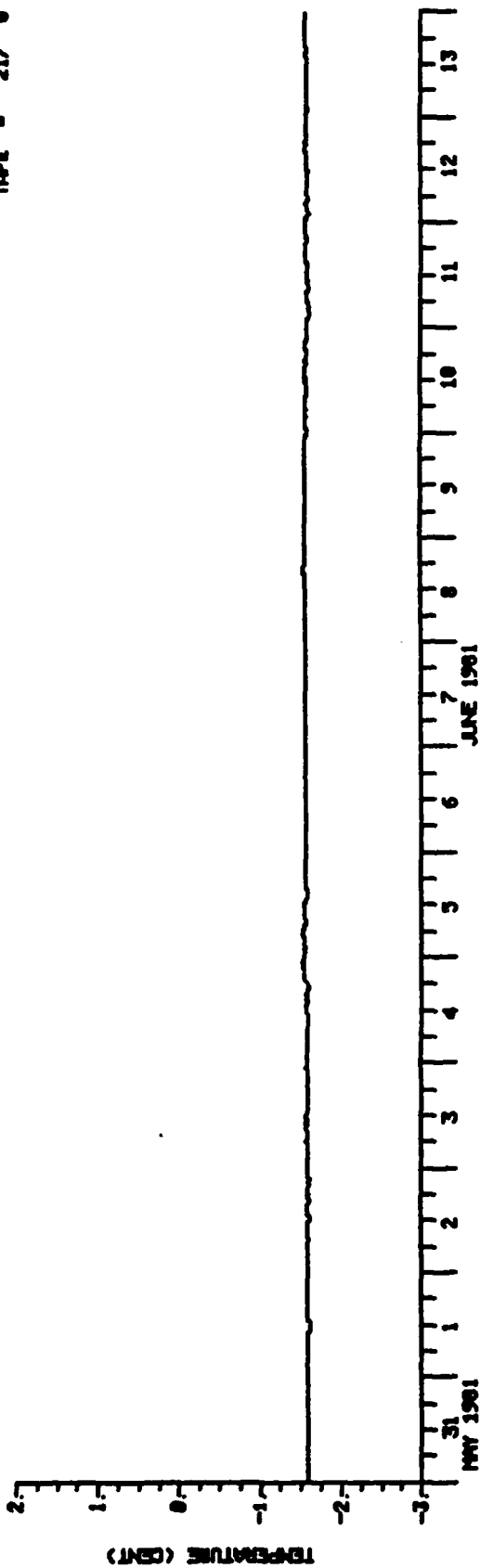
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CO-2
SEPIN - 48
TAPE - 21/ 0



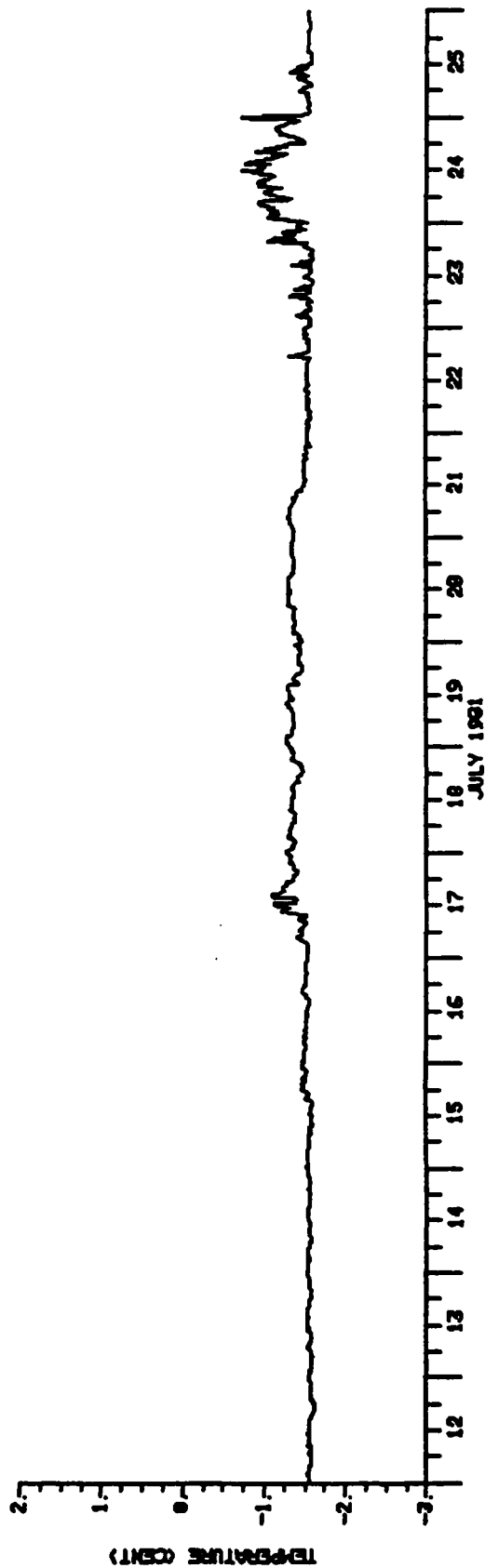
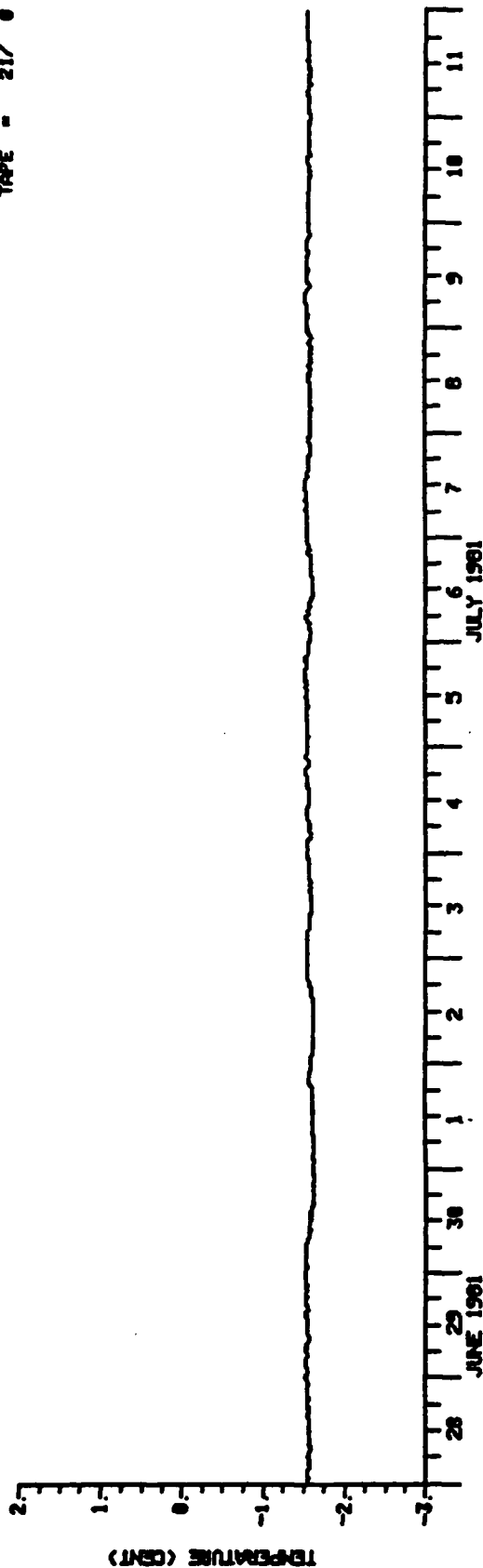
USCG BEAUFORT SEA STUDY

PAGE - 3
 STATION - 00-2
 DEPTH - 40
 TAPE - 21/ 0



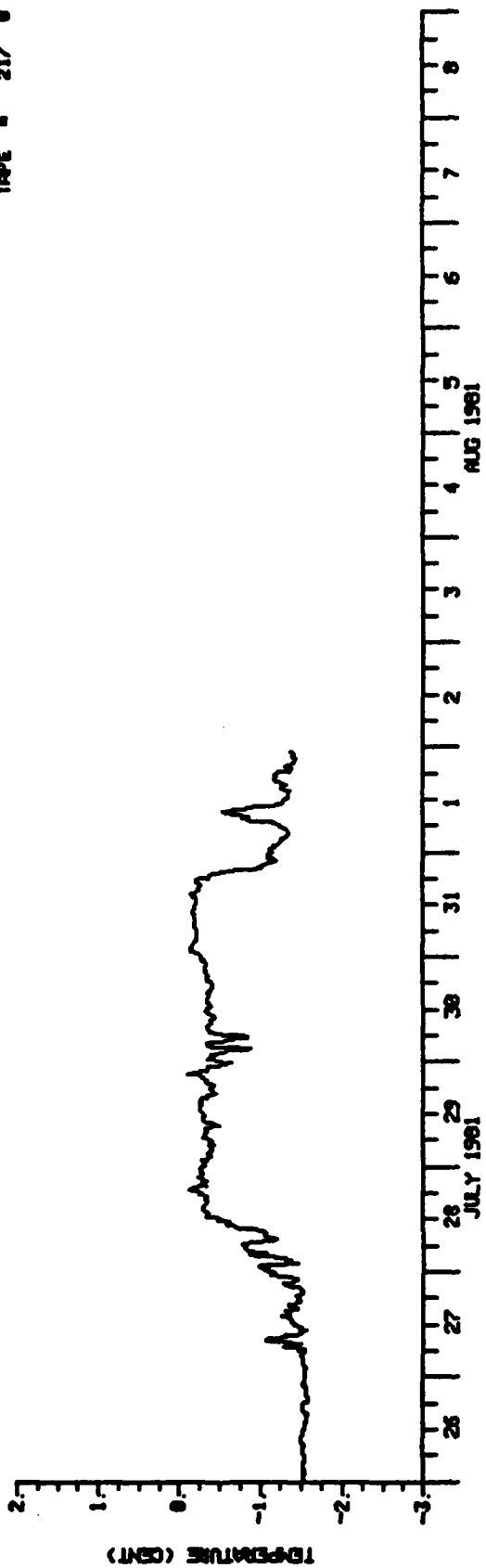
USCG BEAUFORT SEA STUDY

PAGE = 4
 STNID = CO-2
 DEPTH = 40
 TAPE = 21/0



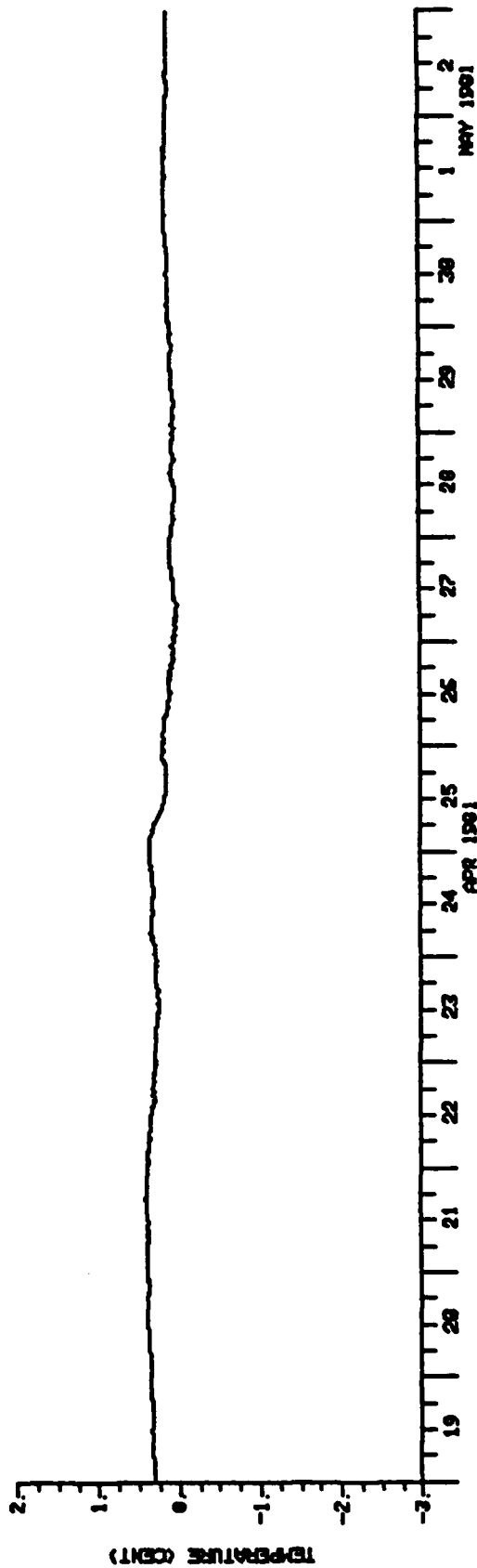
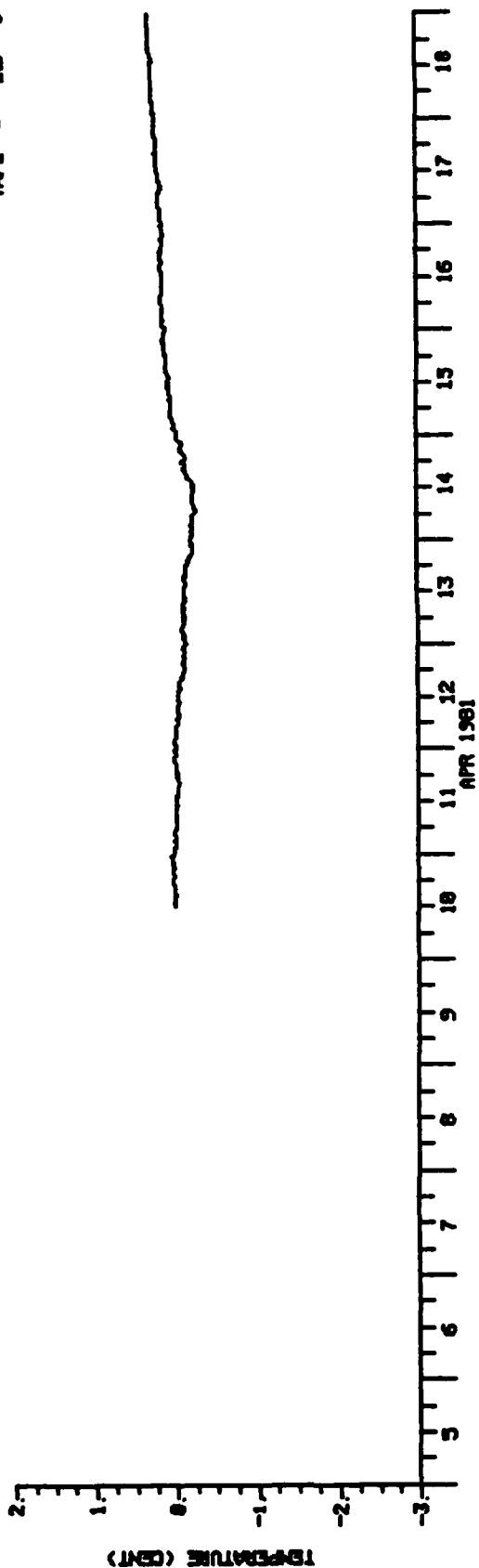
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CO-2
DEPTH - 48
TIME - 21/ 8



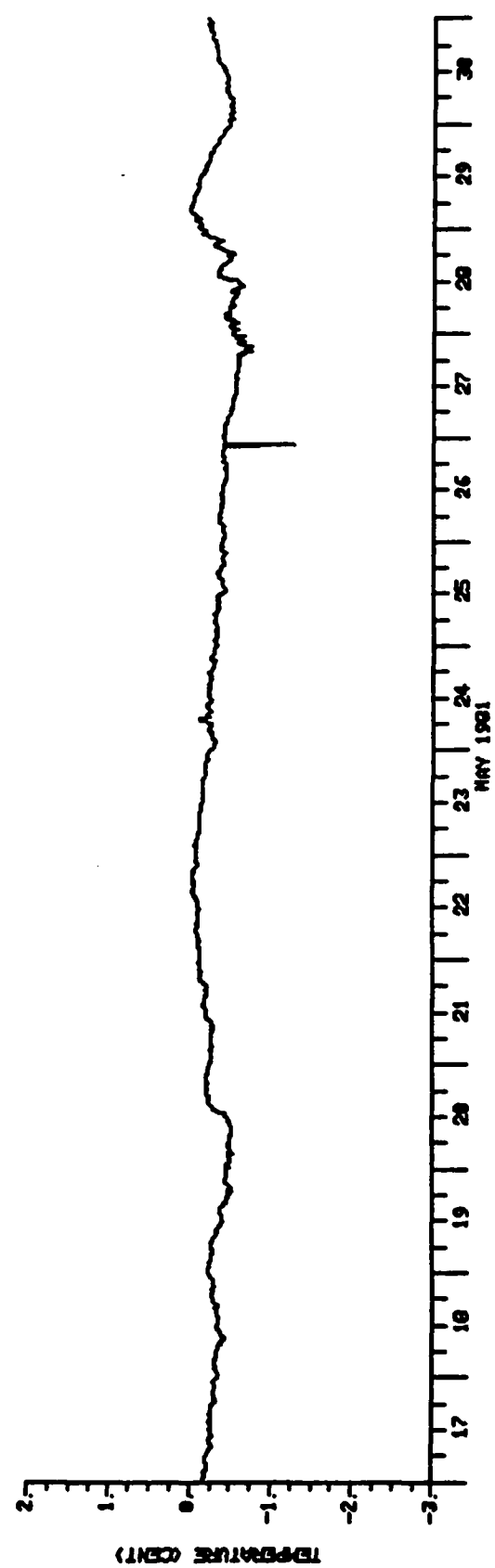
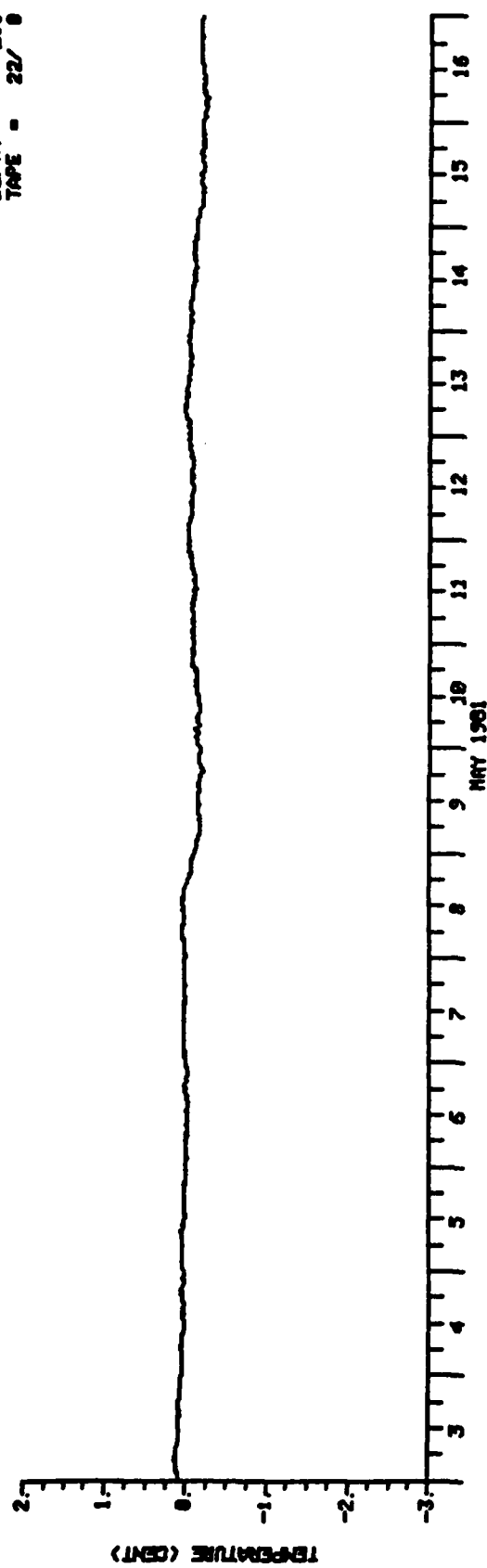
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CO-2
 DEPTH - 250
 TAPE - 22/ 0



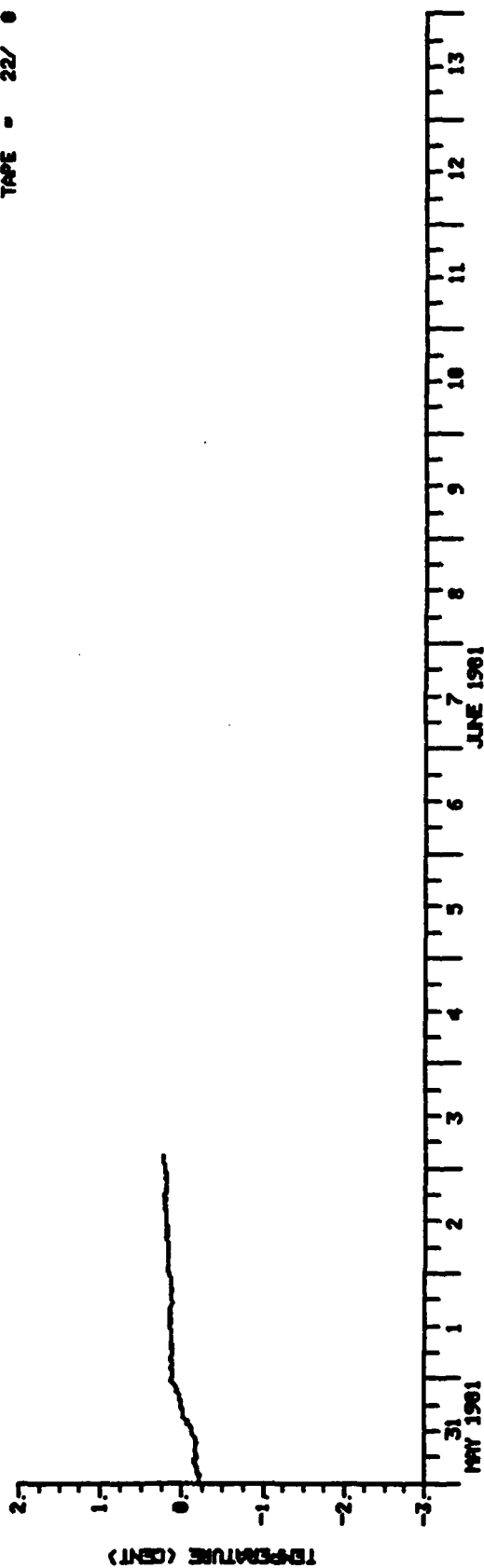
USCG BEAUFORT SEA STUDY

PAGE - 2
STN13 - CD-2
DEPTH - 268
TAPE - 22/ 8



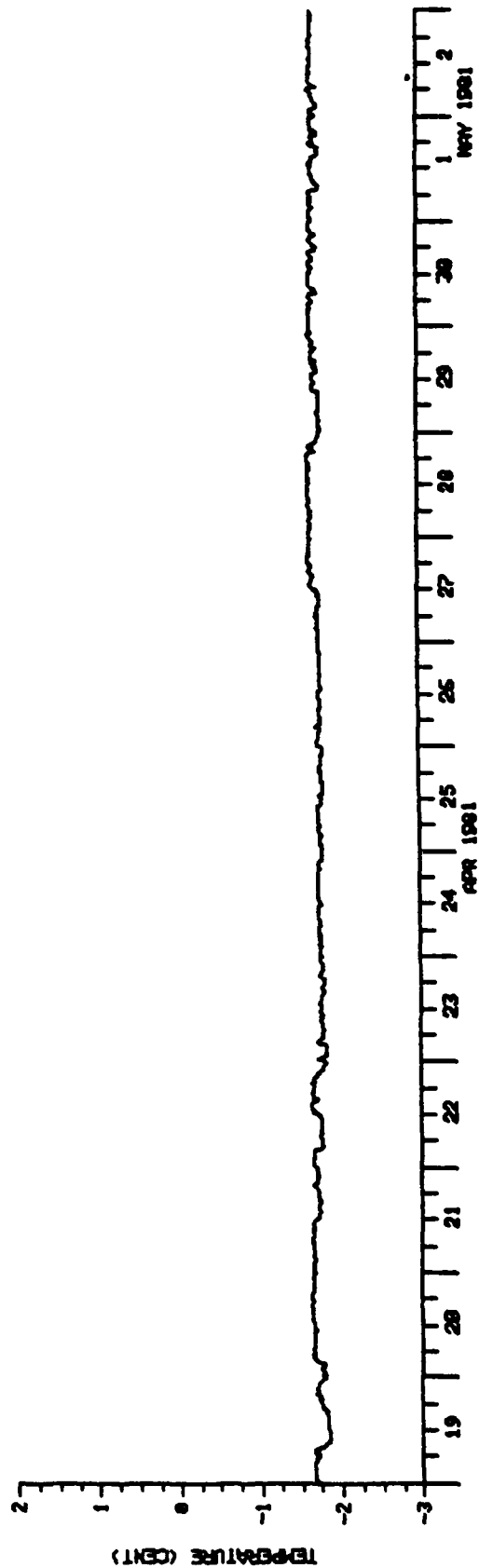
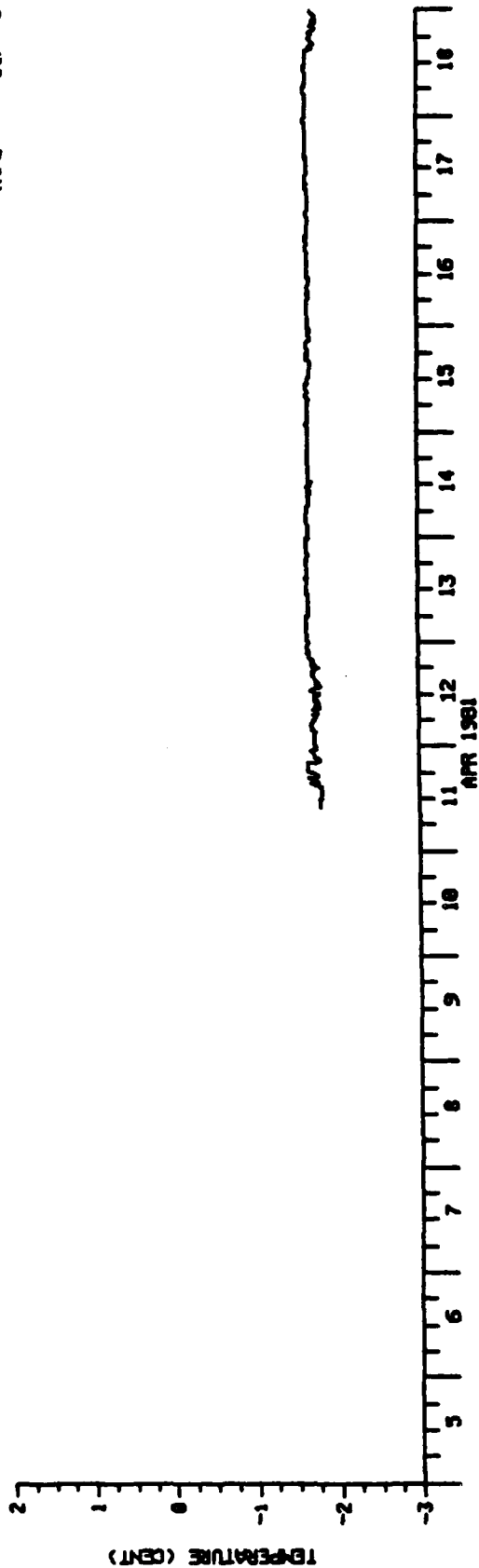
USCG BEAUFORT SEA STUDY

PAGE - 3
STN13 - CO-2
DEPTH - 268
TAPE - 22/ 6



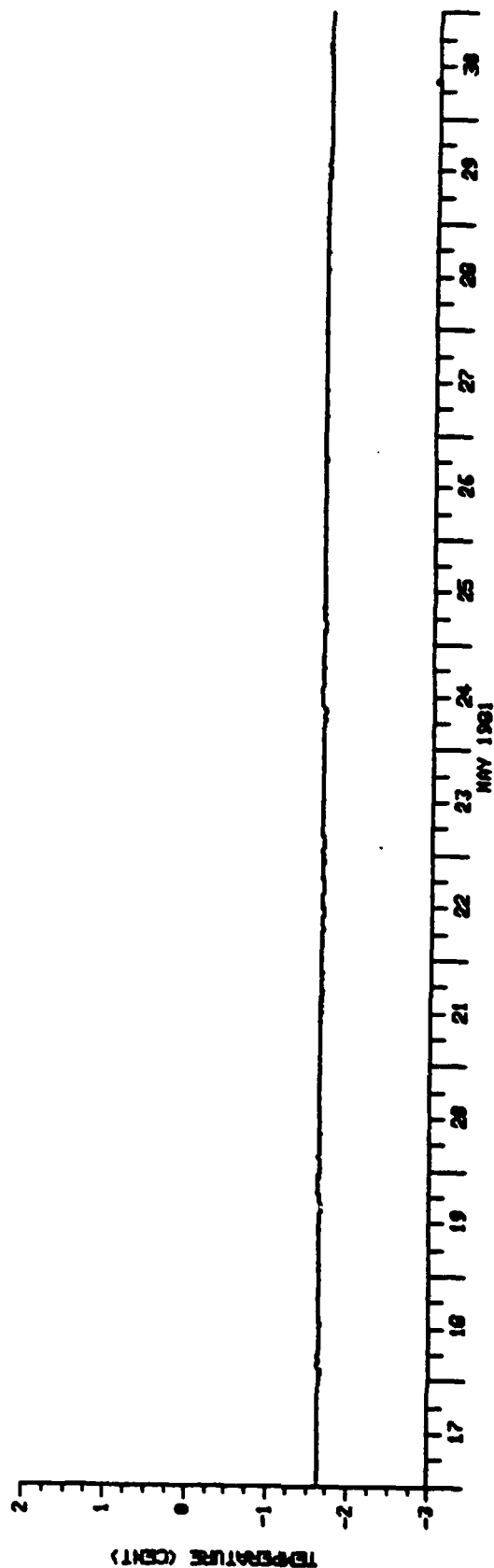
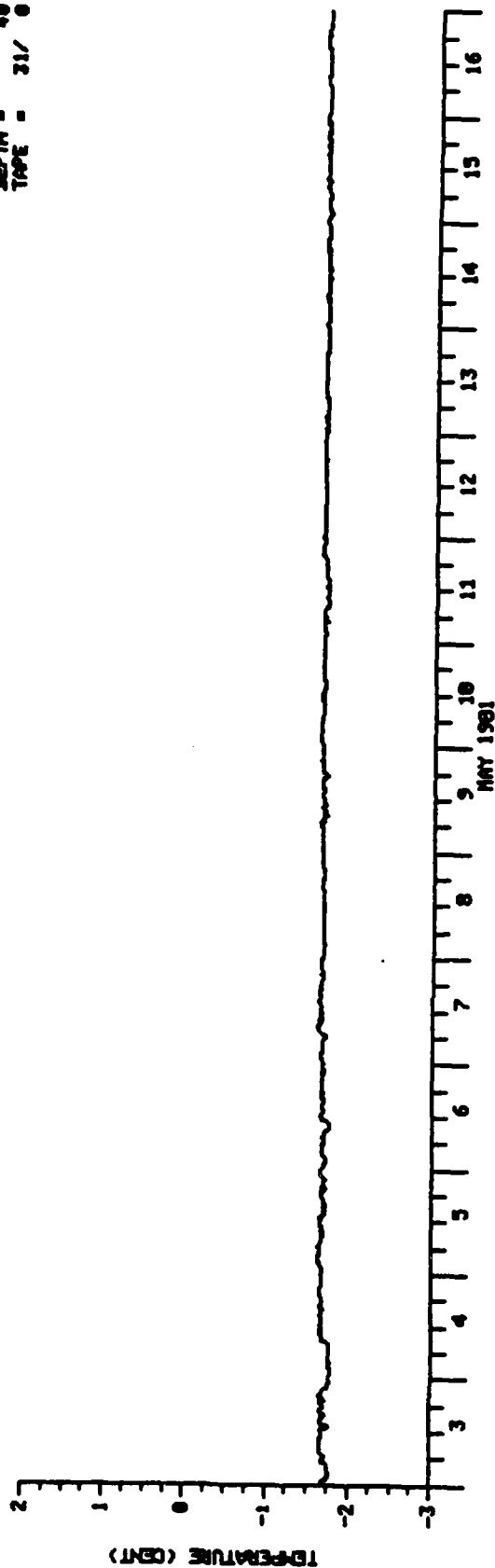
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CO-3
 DEPTH - 48
 TAPE - 31/ 8



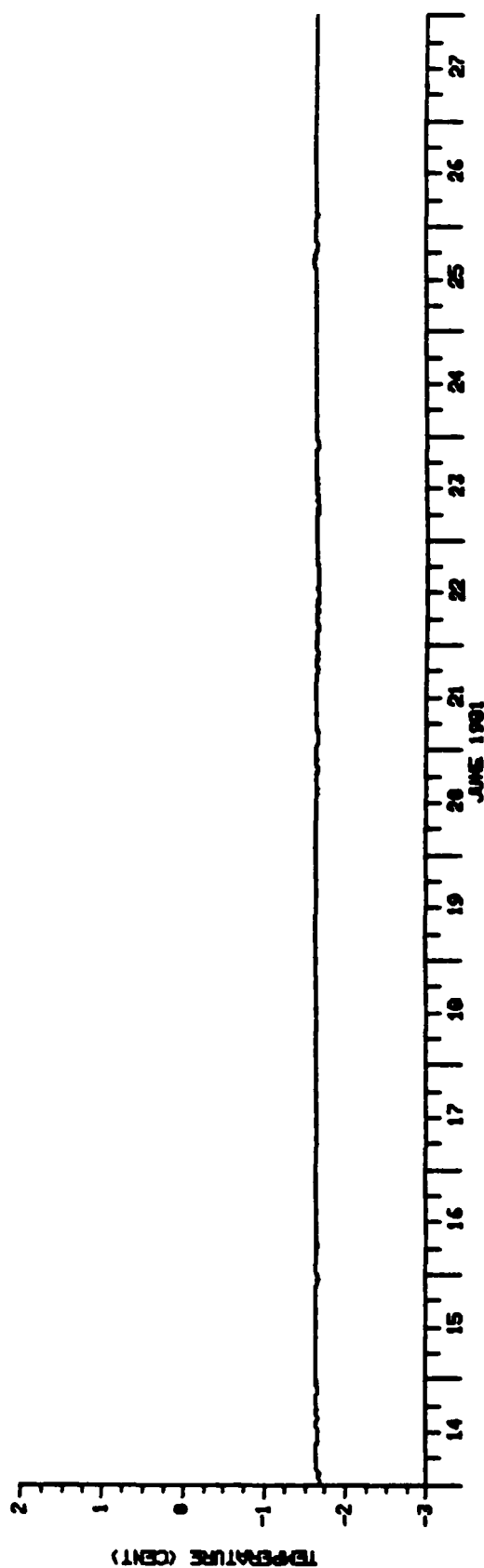
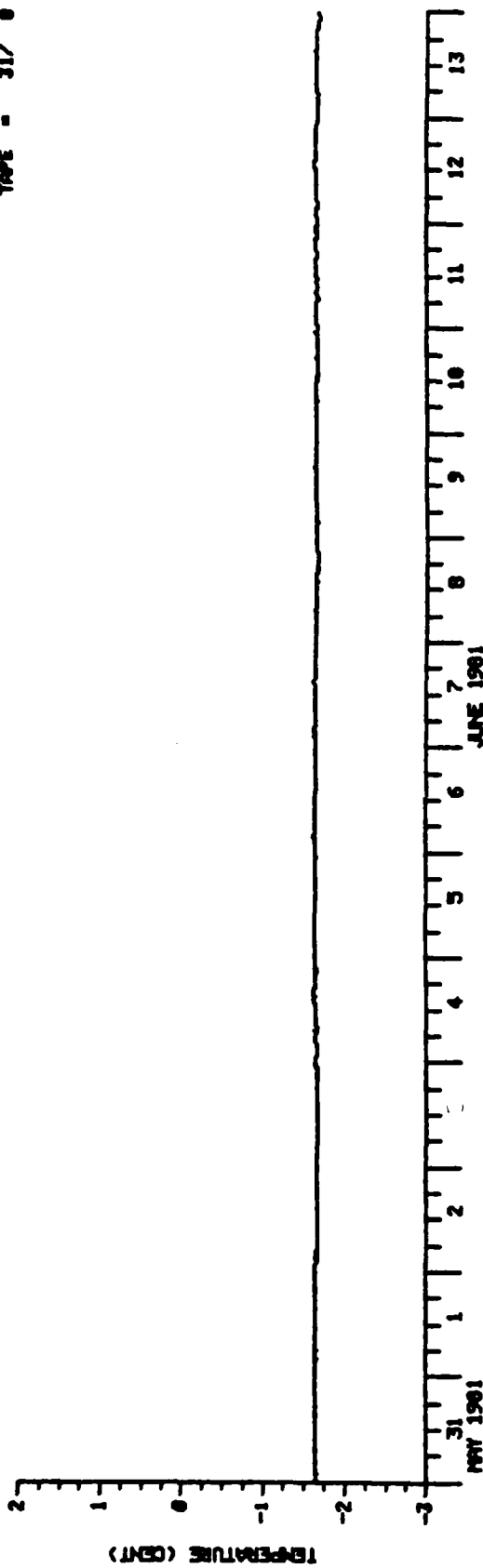
USCG BEAUFORT SEA STUDY

PAGE - 2
STN 13 - CG-3
DEPTH - 40
TAPE - 31/ 0



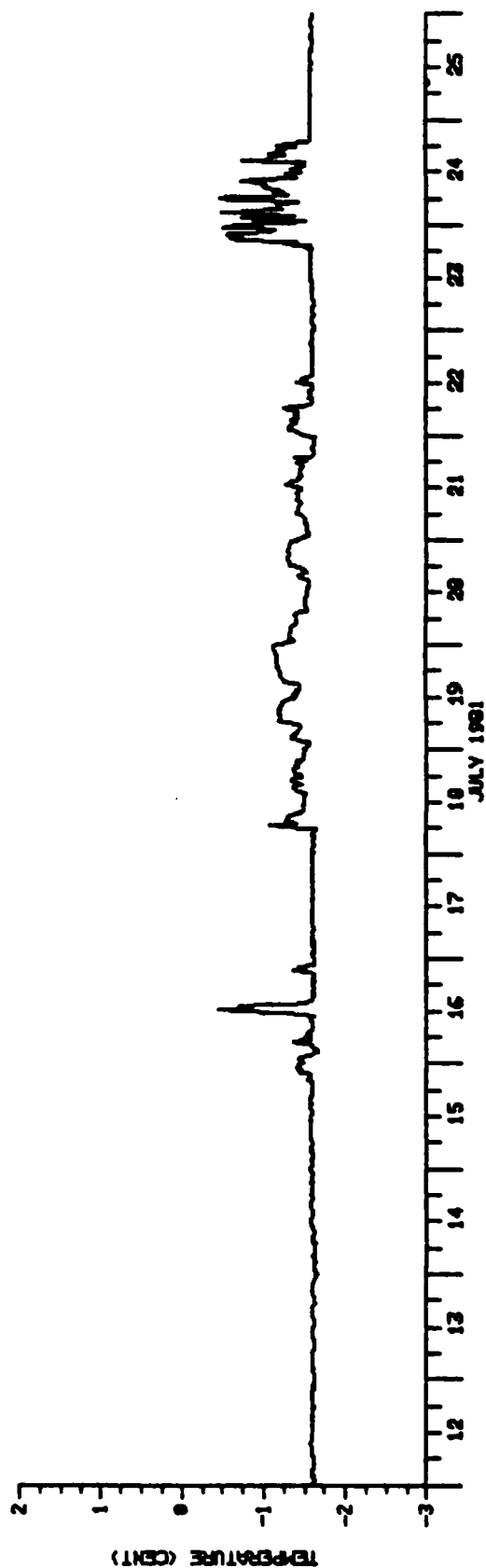
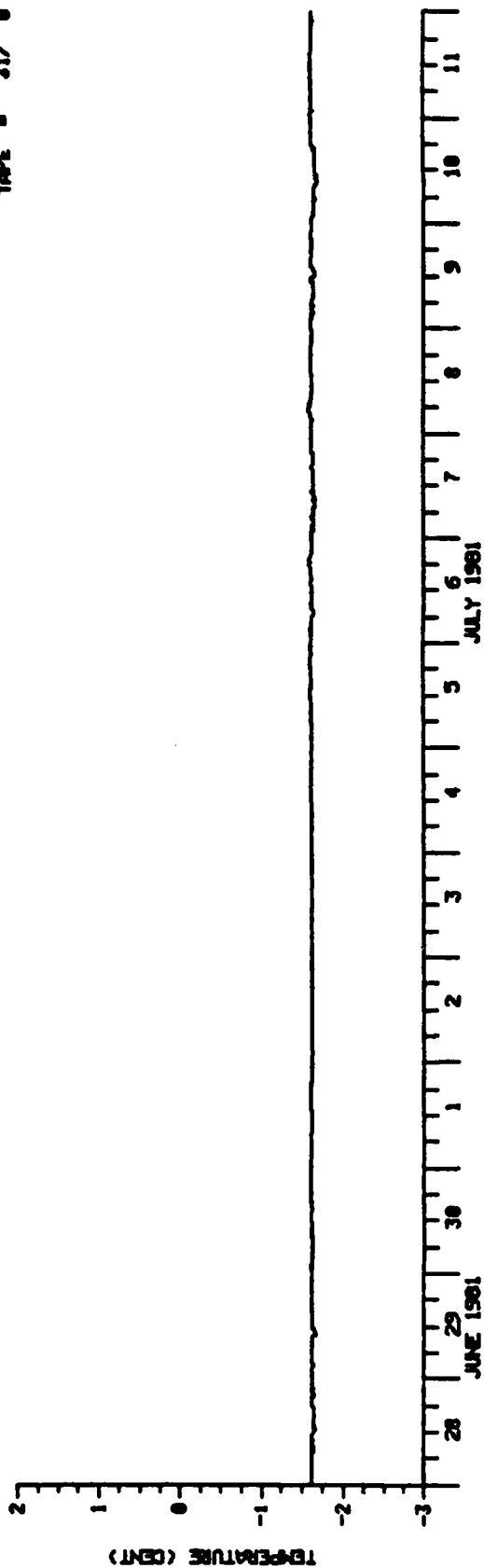
USCG BEAUFORT SEA STUDY

PAGE - 3
STNID - CO-3
DEPTH - 40
TIME - 31/ 0



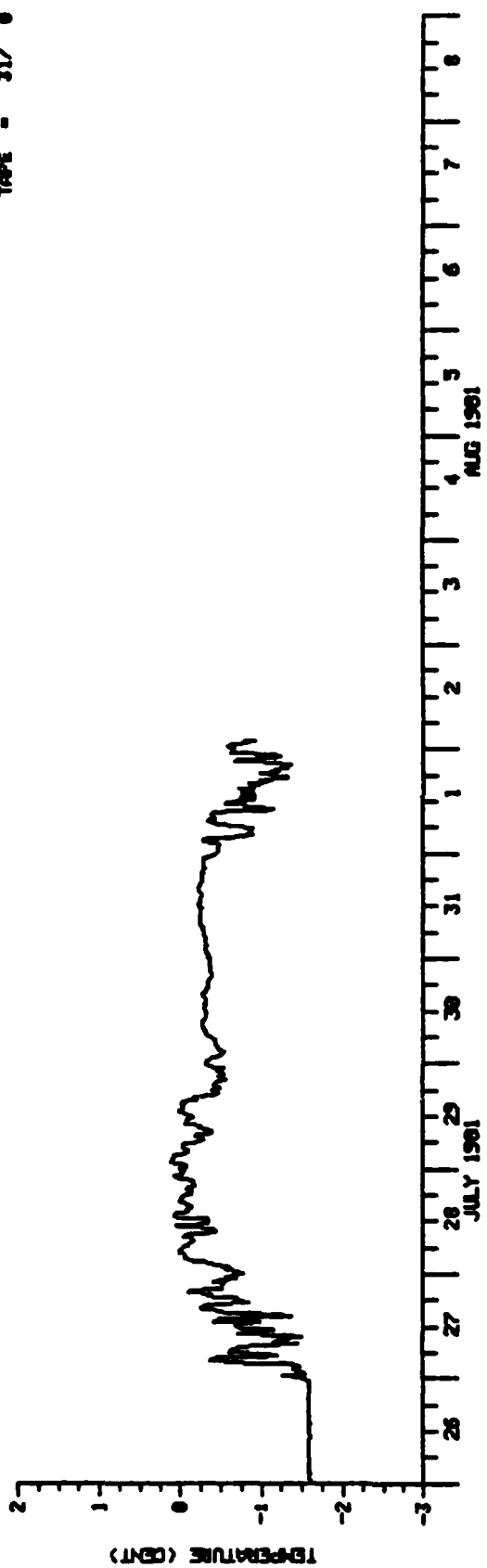
USCG BEAUFORT SEA STUDY

PAGE - 4
STNID - CG-3
DEPTH - 40
TAPE - 31/ 8



USCG BEAUFORT SEA STUDY

PAGE - 5
STATION - 00-3
DEPTH - 40
TAPE - 31/ 0



AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

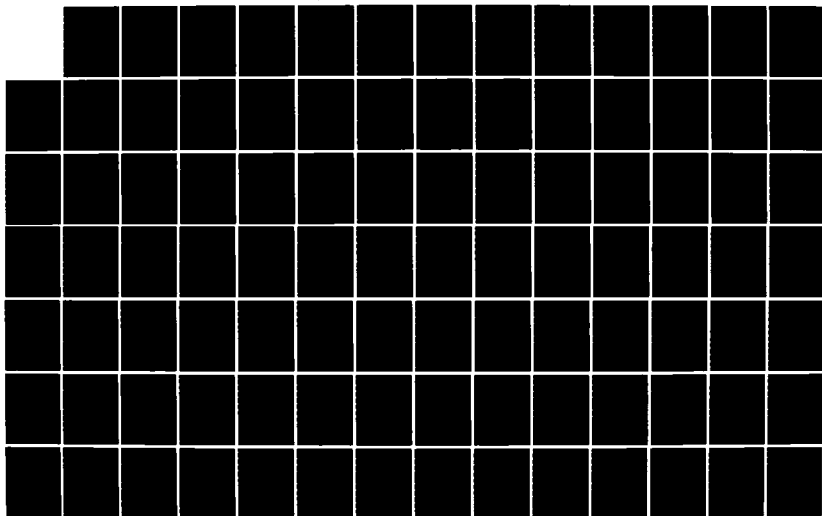
4/6

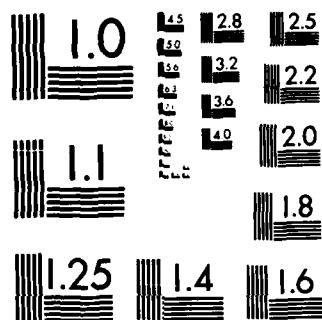
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

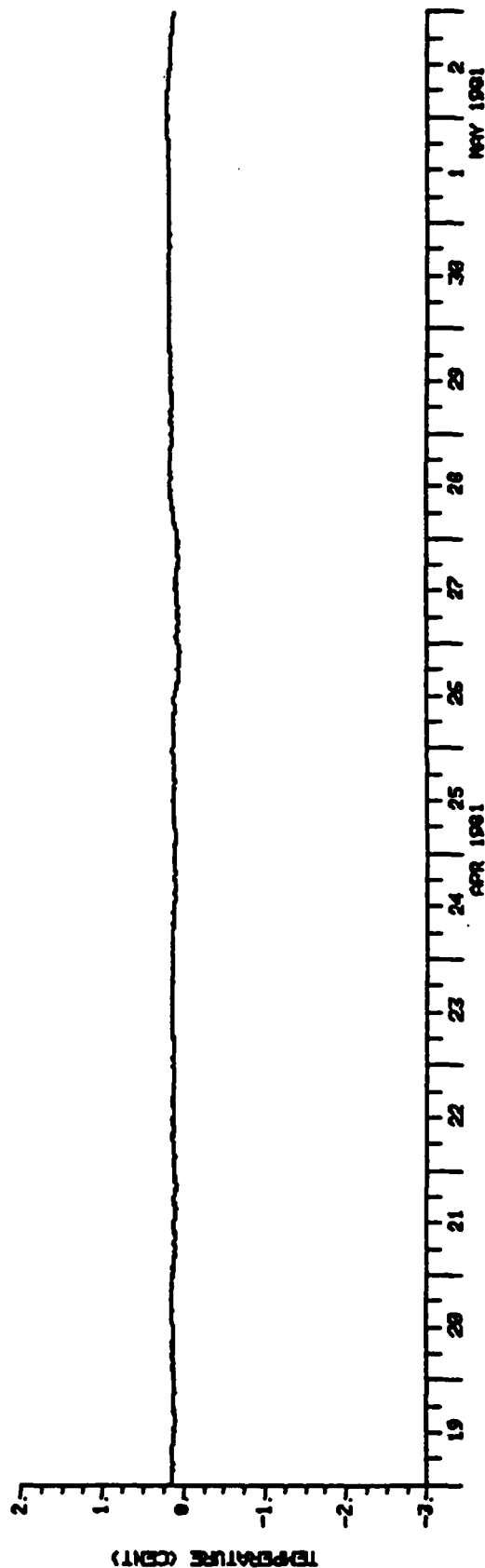
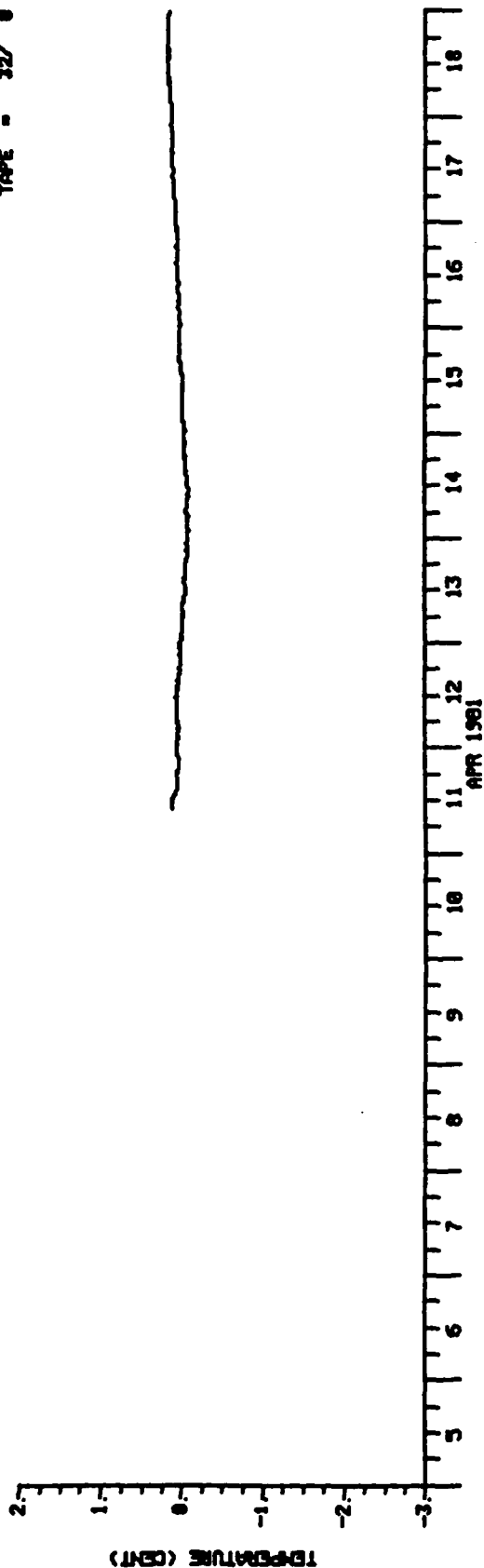
NL





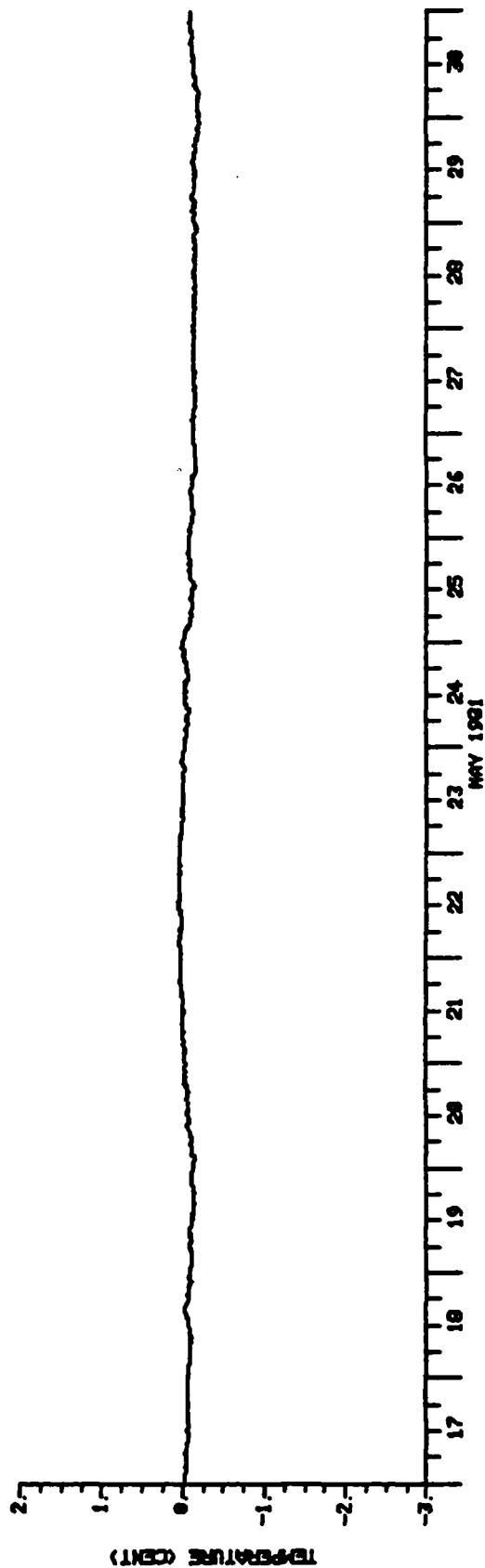
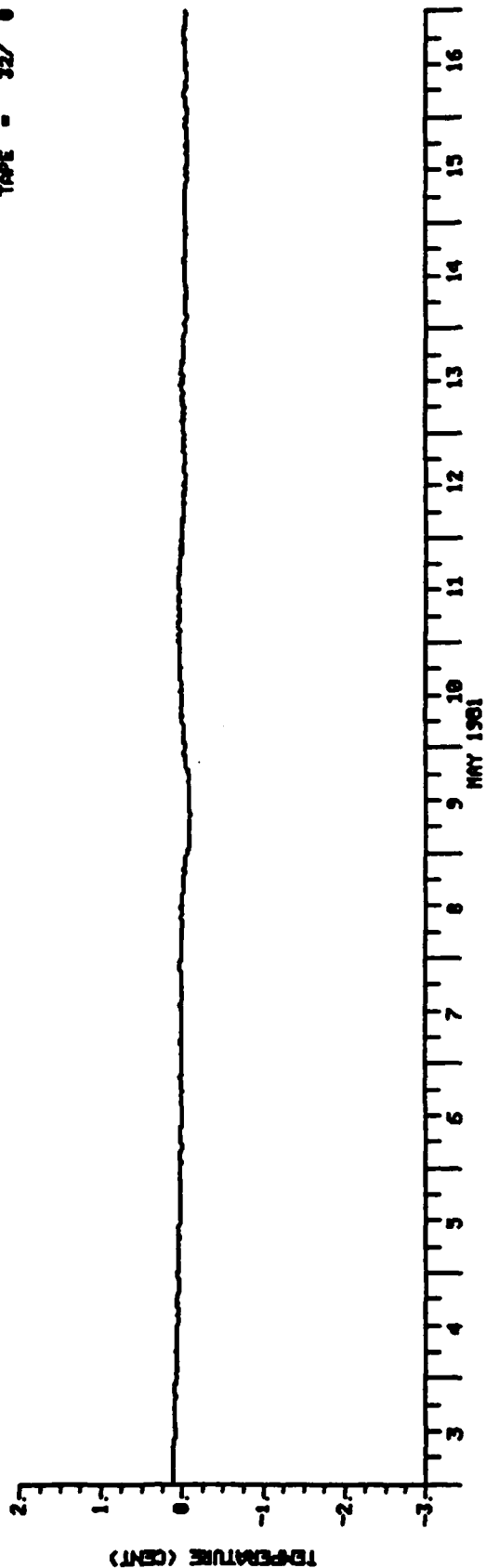
USCG BEAUFORT SEA STUDY

PAGE - 1
 STATION - CO-3
 DEPTH - 268
 TAPE - 32/ 8



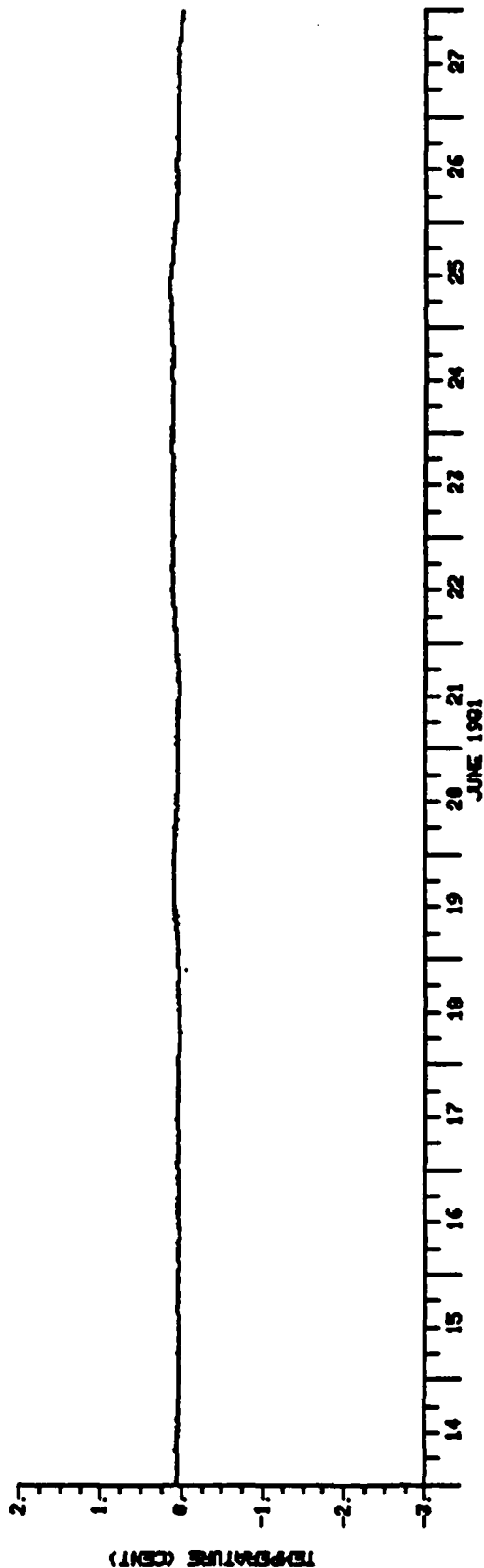
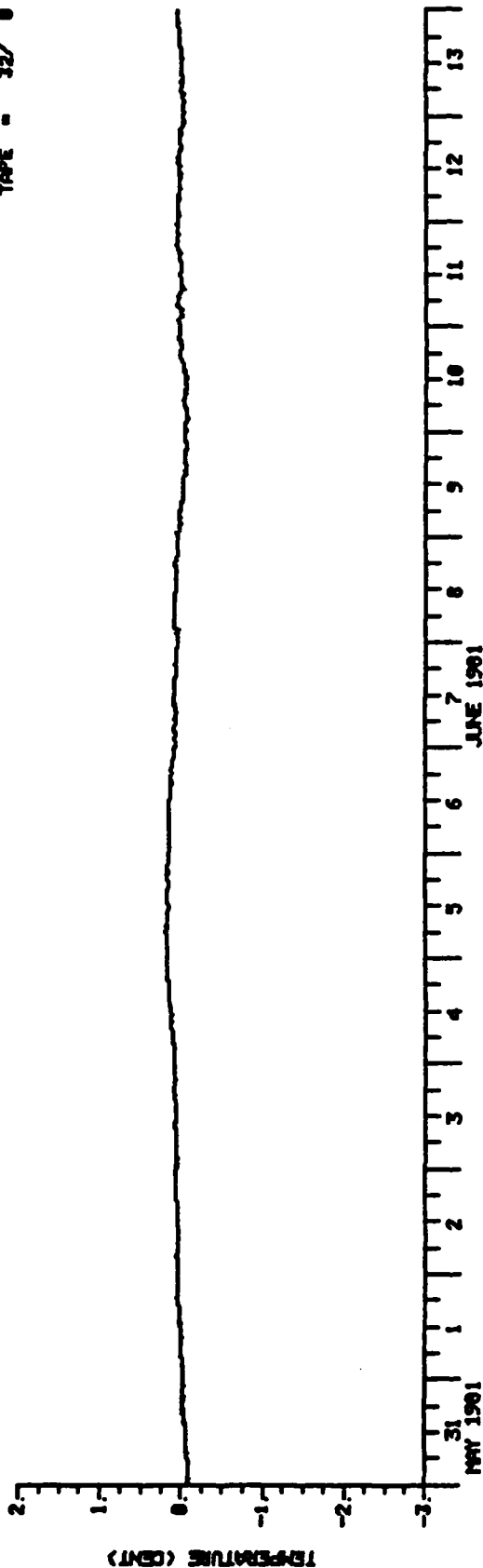
USCG BEAUFORT SEA STUDY

PAGE 2
STN19 = CO-3
DEPTH = 268
TAPE = 32/0



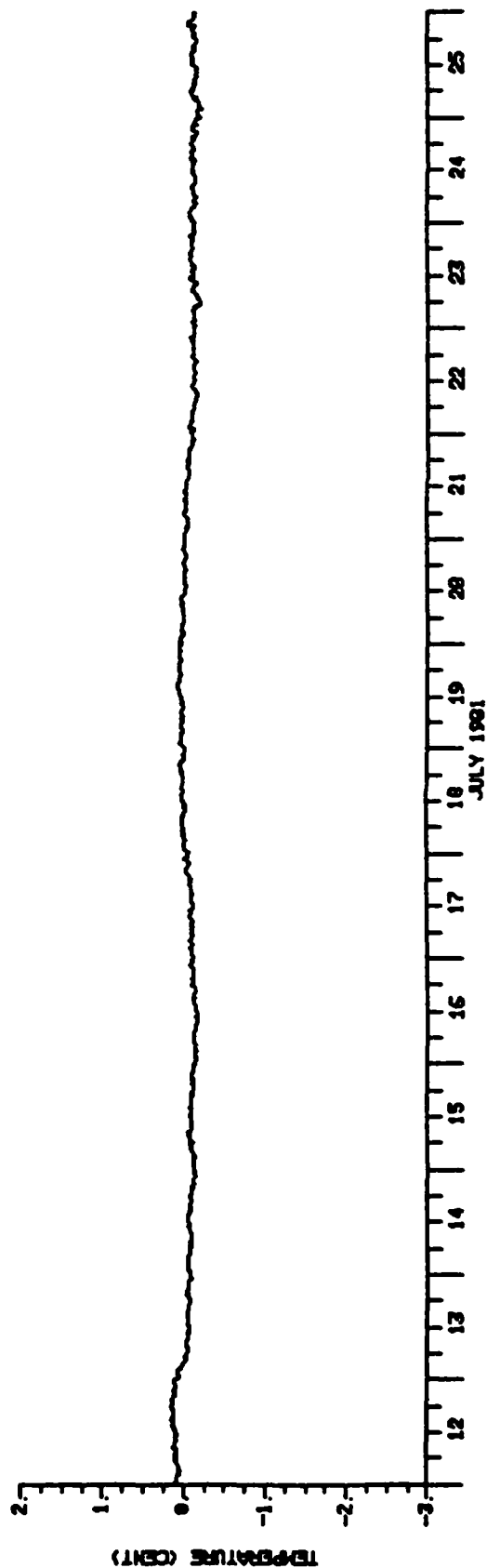
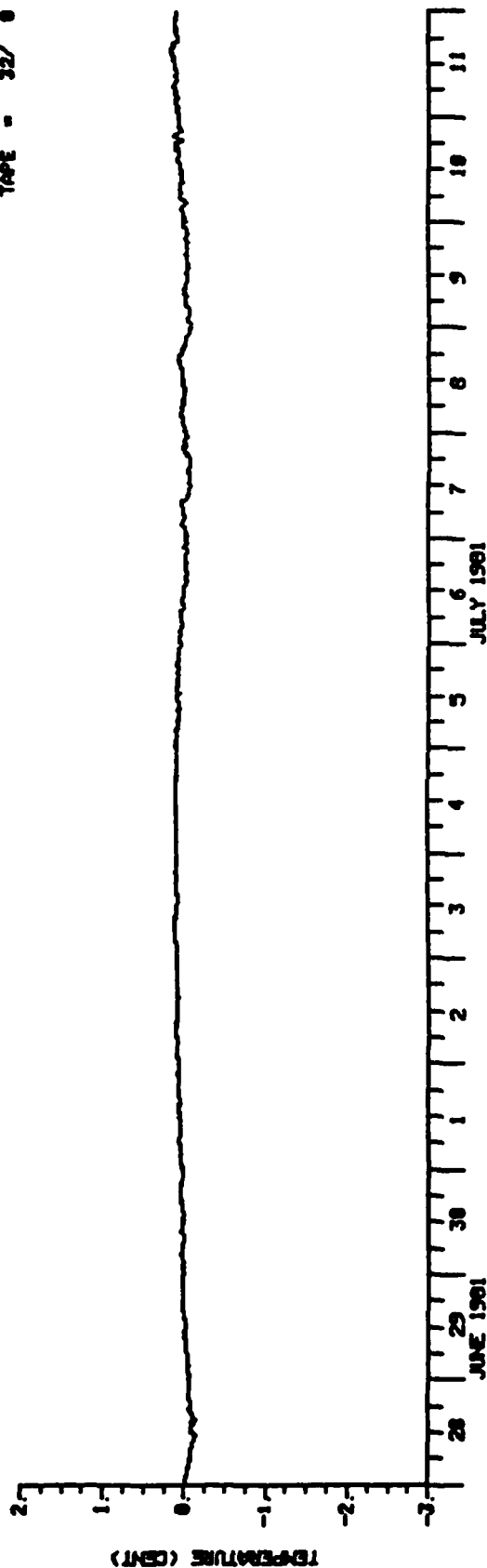
USCG BEAUFORT SEA STUDY

PAGE - 3
 STATION - CD-3
 DEPTH - 250
 TAPE - 32/ 0



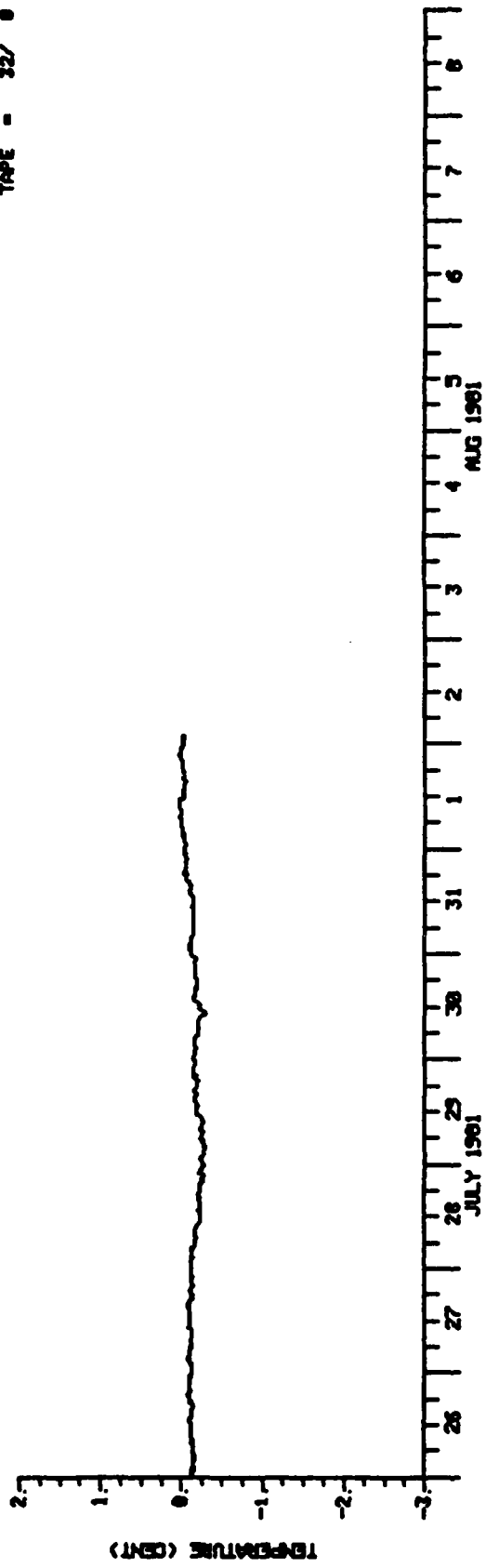
USCG BEAUFORT SEA STUDY

PAGE = 4
 STATION = CO-3
 DEPTH = 250
 TAPE = 32/ 0



USCG BEAUFORT SEA STUDY

PAGE - 5
STATION - CO-3
DEPTH - 258
TAPE - 32/ 8



DATA APPENDIX 5

Weekly Histograms of Offshore versus Longshore Velocity Component
(Longshore is 118° T, Offshore is 28° T), Histograms of Temperature
versus Longshore Velocity Component and Direction versus Speed for
USCG Current Meters

CG 11

STN : CG-1		START TIME : 12: 9		DEPTH : 40 M		FREQUENCY DISTRIBUTION OF		SPEED		AND DIRECTION		TAPE : 11/ 0													
		END TIME : 17:54		LAT : 70.9 N		SAMPLING INTERVAL: 15.00 MINUTES		SPEED (CM/SEC)		LONG : 145.9 W															
		9/ 4/81																							
DIRECTION	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96
(DEG)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	40	13	1																						
	20	39	29		3																				
	30	40	32		5																				
	40	50	33	4	1																				
	50	44	43	15	10	1																			
	60	47	63	11	9																				
	70	40	81	40	8	1																			
	80	55	137	76	31	20	9																		
	90	63	218	106	62	30	44	13	10	1															
	100	68	280	238	159	82	96	98	69	8	2														
	110	80	311	344	227	166	131	92	77	52	33	9	5												
	120	79	255	309	194	115	122	68	52	36	26	22	16	1											
	130	96	236	217	110	57	75	38	3			1	5												
	140	88	183	128	53	20	17	8																	
	150	80	190	87	28	6	1																		
	160	82	130	40	21	4	3																		
	170	74	88	15	2	4	1																		
	180	45	37	15	3																				
	190	50	24	7																					
	200	32	23	2																					
	210	39	20	28																					
	220	33	37	18																					

CG 12


```

STN : CG-1
DEPTN : 150 M
LAT : 70.9 N
LONG : 145.9 W
TAPE : 12/ 0
START TIME: 0:10
END TIME: 23:55
SAMPLING INTERVAL: 15.00 MINUTES
21/ 6/81
27/ 6/81

```

```

STN : CG-1
DEPTN : 150 M
LAT : 70.9 N
LONG : 145.9 W
TAPE : 12/ 0
START TIME: 0:10
END TIME: 23:55
SAMPLING INTERVAL: 15.00 MINUTES
21/ 6/81
27/ 6/81

```

[illegible]

[illegible]

FREQUENCY DISTRIBUTION OF LONGSHORE COMP AND OFFSHORE COMP														
STN : C6-1			DEPTH : 150 M			LAT : 70.9 N			LONG : 145.9 W			TAPE : 12/ 0		
START TIME: 0:10			5/ 7/81			END TIME: 23:55			11/ 7/81			SAMPLING INTERVAL: 15.00		
OFFSHORE COMP			LONGSHORE COMP			LONGSHORE COMP			LONGSHORE COMP			LONGSHORE COMP		
(CM/SEC)			(CM/SEC)			(CM/SEC)			(CM/SEC)			(CM/SEC)		
-60 TO -55	0	0	-60 TO -55	0	0	-60 TO -55	0	0	-60 TO -55	0	0	-60 TO -55	0	0
-55 TO -50	0	0	-55 TO -50	0	0	-55 TO -50	0	0	-55 TO -50	0	0	-55 TO -50	0	0
-50 TO -45	0	0	-50 TO -45	0	0	-50 TO -45	0	0	-50 TO -45	0	0	-50 TO -45	0	0
-45 TO -40	0	0	-45 TO -40	0	0	-45 TO -40	0	0	-45 TO -40	0	0	-45 TO -40	0	0
-40 TO -35	0	0	-40 TO -35	0	0	-40 TO -35	0	0	-40 TO -35	0	0	-40 TO -35	0	0
-35 TO -30	0	0	-35 TO -30	0	0	-35 TO -30	0	0	-35 TO -30	0	0	-35 TO -30	0	0
-30 TO -25	0	0	-30 TO -25	0	0	-30 TO -25	0	0	-30 TO -25	0	0	-30 TO -25	0	0
-25 TO -20	0	0	-25 TO -20	0	0	-25 TO -20	0	0	-25 TO -20	0	0	-25 TO -20	0	0
-20 TO -15	0	0	-20 TO -15	0	0	-20 TO -15	0	0	-20 TO -15	0	0	-20 TO -15	0	0
-15 TO -10	0	0	-15 TO -10	0	0	-15 TO -10	0	0	-15 TO -10	0	0	-15 TO -10	0	0
-10 TO -5	0	0	-10 TO -5	0	0	-10 TO -5	0	0	-10 TO -5	0	0	-10 TO -5	0	0
-5 TO 0	0	0	-5 TO 0	0	0	-5 TO 0	0	0	-5 TO 0	0	0	-5 TO 0	0	0
0 TO 5	0	0	0 TO 5	0	0	0 TO 5	0	0	0 TO 5	0	0	0 TO 5	0	0
5 TO 10	0	0	5 TO 10	0	0	5 TO 10	0	0	5 TO 10	0	0	5 TO 10	0	0
10 TO 15	0	0	10 TO 15	0	0	10 TO 15	0	0	10 TO 15	0	0	10 TO 15	0	0
15 TO 20	0	0	15 TO 20	0	0	15 TO 20	0	0	15 TO 20	0	0	15 TO 20	0	0
20 TO 25	0	0	20 TO 25	0	0	20 TO 25	0	0	20 TO 25	0	0	20 TO 25	0	0
25 TO 30	0	0	25 TO 30	0	0	25 TO 30	0	0	25 TO 30	0	0	25 TO 30	0	0
30 TO 35	0	0	30 TO 35	0	0	30 TO 35	0	0	30 TO 35	0	0	30 TO 35	0	0
35 TO 40	0	0	35 TO 40	0	0	35 TO 40	0	0	35 TO 40	0	0	35 TO 40	0	0
40 TO 45	0	0	40 TO 45	0	0	40 TO 45	0	0	40 TO 45	0	0	40 TO 45	0	0
45 TO 50	0	0	45 TO 50	0	0	45 TO 50	0	0	45 TO 50	0	0	45 TO 50	0	0
50 TO 55	0	0	50 TO 55	0	0	50 TO 55	0	0	50 TO 55	0	0	50 TO 55	0	0
55 TO 60	0	0	55 TO 60	0	0	55 TO 60	0	0	55 TO 60	0	0	55 TO 60	0	0
60 TO 65	0	0	60 TO 65	0	0	60 TO 65	0	0	60 TO 65	0	0	60 TO 65	0	0

STN : CG-1 DEPTH : 150 M LAT : 70.9 N LONG : 145.9 W TAPE : 12/ 0
START TIME: 0:10 12/ 7/81 END TIME: 23:55 18/ 7/81 SAMPLING INTERVAL: 15.00 MINUTES

STN : CG-1
DEPTN : 150 M
LAT : 70.9 N
LONG : 145.9 W
TAPE : 12/ 0
START TIME: 0:10
END TIME: 23:55
SAMPLING INTERVAL: 15.00 MINUTES

LONGSHORE COMP (CM/SEC)

[illegible]OFFSHORE COMP
(CM/SEC)[illegible]

STN : CG-1										FREQUENCY DISTRIBUTION OF										SPEED AND DIRECTION										TAPE : 12/ 0									
START TIME: 12:10										DEPTH : 150 M										LAT : 70.9 N										LONG : 145.9 W									
END TIME: 17:55										END TIME: 17:55										1/ 8/81										SAMPLING INTERVAL: 15.00 MINUTES									
																														</									

CG 21


```

STN : C6-2          DEPTH : 40 M      LAT : 70.9 N      LONG : 146.0 W      TAPE : 21/ 0
START TIME: 0: 7    21/ 6/81          END TIME: 23:52    27/ 6/81          SAMPLING INTERVAL: 15.00 MINUTES

```

```

STN : CG-2
DEPTH : 40 M
LAT : 70.9 N
LONG : 146.0 W
TAPE : 21/ 0
START TIME: 0: 7
END TIME: 23:52
SAMPLING INTERVAL: 15.00 MINUTES
21/ 6/81
27/ 6/81

```

LONGSHORE COMP (CM/SEC)

Year	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060				
1960	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60

OFFSHORE COMP
(CM/SEC)

60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65

14	54	10		28
31	132	138	10	68
	1	34	33	10
			67	
			42	

0672

[illegible]

CG 22

[illegible]

1 14 3 2 4
1 131 24
2 15
11 43 11 63
1 80 163 23 3
1 20 17 19
1 7 12 1

FREQUENCY DISTRIBUTION OF LONGSHORE COMP AND OFFSHORE COMP

STN : CG-2 DEPTH : 268 M LAT : 70.9 N LONG : 146.0 W TAPE : 22/ 0
 START TIME: 0: 8 10/ 5/91 END TIME: 23:53 16/ 5/01 SAMPLING INTERVAL: 15.00 MINUTES

OFFSHORE COMP (CM/SEC)		LONGSHORE COMP (CM/SEC)																																							
-24 TO	-22	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24															
-22 TO	-20	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																
-20 TO	-18	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																	
-18 TO	-16	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																		
-16 TO	-14	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																			
-14 TO	-12	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																				
-12 TO	-10	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																					
-10 TO	-8	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																						
-8 TO	-6	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																							
-6 TO	-4	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																								
-4 TO	-2	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																									
-2 TO	0	-2	0	2	4	6	8	10	12	14	16	18	20	22	24																										
0 TO	2	0	2	4	6	8	10	12	14	16	18	20	22	24																											
2 TO	4	2	4	6	8	10	12	14	16	18	20	22	24																												
4 TO	6	4	6	8	10	12	14	16	18	20	22	24																													
6 TO	8	6	8	10	12	14	16	18	20	22	24																														
8 TO	10	8	10	12	14	16	18	20	22	24																															
10 TO	12	10	12	14	16	18	20	22	24																																
12 TO	14	12	14	16	18	20	22	24																																	
14 TO	16	14	16	18	20	22	24																																		
16 TO	18	16	18	20	22	24																																			
18 TO	20	18	20	22	24																																				
20 TO	22	20	22	24																																					
22 TO	24	22	24																																						
24 TO	26	24	26																																						

```

STN : CG-2
DEPTH : 288 M
LAT : 70.9 N
LONG : 146.0 W
END TIME : 23:53
START TIME : 0:00 17/ 5/91
SAMPLING INTERVAL: 15.00 MINUTES
TAPE : 22/ 0

```

```

STN : CG-2
DEPTH : 288 M
LAT : 70.9 N
LONG : 146.0 W
END TIME : 23:53
START TIME : 0:00 17/ 5/91
SAMPLING INTERVAL: 15.00 MINUTES
TAPE : 22/ 0

```

LONGSHORE COMP (CM/SEC)

OFFSHORE COMP (CM/SEC)	24	20	18	16	14	12	10	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26
-24 TO	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24	26

[illegible]

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
1	1	2	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	3	2	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	4	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	5	4	5	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	6	5	6	5	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	7	6	7	6	6	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	8	7	8	7	7	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	9	8	9	8	8	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	10	9	10	9	9	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
10	10	11	10	11	10	10	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	11	12	11	12	11	11	12	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
12	12	13	12	13	12	12	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
13	13	14	13	14	13	13	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	14	15	14	15	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
15	15	16	15	16	15	15	16	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
16	16	17	16	17	16	16	17	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
17	17	18	17	18	17	17	18	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
18	18	19	18	19	18	18	19	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
19	19	20	19	20	19	19	20	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
20	20	21	20	21	20	20	21	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
21	21	22	21	22	21	21	22																

[illegible]

CG 31

STN : CE-3
 START TIME: 10:7 11/4/01
 DEPTH : 40 M
 END TIME: 1:52 2/8/01
 FREQUENCY DISTRIBUTION OF
 LAT : 70.9 N
 SPEED
 (CM/SEC)
 AND TEMPERATURE
 LONG : 145.0 W
 SAMPLING INTERVAL: 15.00 MINUTES
 TAPE : 31/ 0

TEMPERATURE (CENT)	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
-2.0 TO -1.9	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
-1.9 TO -1.8	1	197	173	117	110	102	98	39	30	16	4	2	1	2	4	66	48	33	9	12	7	8	4	2	48	
-1.8 TO -1.7	3	592	592	523	1181	1205	1059	695	395	318	239	8	2	155	105	104	37	14	8	5	2	5	2	3	5	
-1.7 TO -1.6		2	27	3	16	49	74	63	52	50	9	10	10	7	7	9	24	11	22	14	1	2	3			
-1.6 TO -1.5				3	6	2	1	15	10	9	10	10	6	10	5	10	4	4	5	3	3					
-1.5 TO -1.4		3	11	3	3		9	12	10	3	10	0	6	1	3	3	3	2	1	3	1					
-1.4 TO -1.3		1	2			1	21	4	2	2	4	5	8	4	1	1	1	3	1	3	1	1				
-1.3 TO -1.2						1			1	2	2	2	2	2	1	1	3	4	1	1	1	1				
-1.2 TO -1.1								1	2	1	1	1	3	3	1	3	10	4	1	1						
-1.1 TO -1.0																2	4	4	1	1						
-1.0 TO -0.9																3	5	4	3	1						
-0.9 TO -0.8																3	4	4	3							
-0.8 TO -0.7																4	5	3	3							
-0.7 TO -0.6																6	6	3	3	1						
-0.6 TO -0.5																7	7	7	9	1						
-0.5 TO -0.4																8	8	8	1	5	2					
-0.4 TO -0.3																19	21		4	1						
-0.3 TO -0.2																3	7	4			2					
-0.2 TO -0.1																16	20	10								
-0.1 TO 0.0																2	15	20	1							
0.0 TO 0.1																6	7									
0.1 TO 0.2																1	1									
0.2 TO 0.3																2	6									
0.3 TO 0.4																1	2									
0.4 TO 0.5																1	1									
0.5 TO 0.6																1	1									
0.6 TO 0.7																1	1									
0.7 TO 0.8																1	1									
0.8 TO 0.9																1	1									
0.9 TO 1.0																1	1									

799 823 1058 1306 1322 856 551 422 395 415 352 266 239 190 156 110 44 31 17 14 9 7 10016

CG 32

[illegible]

[illegible]

STN : CG-3
FREQUENCY DISTRIBUTION OF LONGSHORE CORP AND OFFSHORE CORP
DEPTH : 268 M LAT : 70.9 N LONG : 146.0 W TAPE : 32/ 0
START TIME: 0: 7 24/ 5/81 END TIME: 23:52 30/ 5/81 SAMPLING INTERVAL: 15.00 MINUTES

```

STN : CG-3
DEPTH : 268 M
LAT : 70.9 N
LONG : 146.0 W
TAPE : 32/ 0
START TIME: 0: 7 24/ 5/81
END TIME: 23:52 30/ 5/81
SAMPLING INTERVAL: 15.00 MINUTES

```

LONGSHORE COMP (CM/SEC)

	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24
--	-----	-----	-----	-----	-----	-----	-----	-----	----	----	----	----	---	---	---	---	---	----	----	----	----	----	----	----	----

OFFSHORE COMP (CN/SEC)	22	20	18	16	14	12	10	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26
-24 TO	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24	26

3	11	1	1	4	2	47	1	7
5		11	4	20	20	119	56	40
			8	86	34	24	57	20
			8	34	1	1	1	4

55846762
83517321
-004

2
-62

672

[illegible]

FREQUENCY DISTRIBUTION OF LONGSHORE COMP AND OFFSHORE COMP

```

STN : C6-3
START TIME: 0: 7
              END TIME: 23:52
              LAT : 70.9 N
              DEPTH : 268 M
              LONG : 146.0 W
              TAPE : 32/ 0
              SAMPLING INTERVAL: 15.00 MINUTES

```

END TIME: 23:52 13/ 6/81

SAMPLING INTERVAL: 15.00 MINUTES

[illegible]

[illegible]

OFFSHORE CORP (CM/SEC)	22	20	18	16	14	12	10	8	6	4	2
-24 TO	-24 TO	-22 TO	-20 TO	-18 TO	-16 TO	-14 TO	-12 TO	-10 TO	-8 TO	-6 TO	-4 TO
-2 TO	0 TO	2 TO	4 TO	6 TO	8 TO	10 TO	12 TO	14 TO	16 TO	18 TO	20 TO
22 TO	24 TO	26 TO	28 TO	30 TO	32 TO	34 TO	36 TO	38 TO	40 TO	42 TO	44 TO

1 2 13 23
4 40 110 12 3
2 56 77 19 22 2
2 18 26 38 34 9
2 9 4 16 8

672

STN : CG-3
 DEPTH : 268 M LAT : 70.5 N LONG : 146.0 W
 START TIME: 0:7 12/ 7/81 END TIME: 23:52 10/ 7/81
 FREQUENCY DISTRIBUTION OF LONGSHORE COMP AND OFFSHORE COMP
 TAPE : 32/ 0
 SAMPLING INTERVAL: 15.00 MINUTES

```

STN : CG-3
DEPT : 258 M
LAT : 70.5 N
LONG : 146.0 W
END TIME: 23:52
START TIME: 0:7
SAMPLING INTERVAL: 15.00 MINUTES
TAPE : 32/0

```

LONGSHORE COMP (CM/SEC)

Longitudinal time (hr/sec)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
-24	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-22	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-20	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-18	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-16	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-14	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-12	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-10	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-8	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-6	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-4	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
-2	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
0	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
2	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
4	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
6	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
8	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
10	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
12	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
14	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18	20	22	24						
16	-10	-12	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16	18									

OFFSHORE COMP (CM/SEC)
-24 TO -22
-22 TO -20
-20 TO -18
-18 TO -16
-16 TO -14
-14 TO -12
-12 TO -10
-10 TO -8
-8 TO -6
-6 TO -4
-4 TO -2
-2 TO 0
0 TO 2
2 TO 4
4 TO 6
6 TO 8
8 TO 10
10 TO 12
12 TO 14
14 TO 16
16 TO 18
18 TO 20
20 TO 22
22 TO 24
24 TO 26

[illegible]

**00000000002
 14
 73
 262
 263
 57
 1
000000000**

```
STN : CG-3          LAT : 70.9 N      TAPE :           32/ 0
DEPTN : 268 M       LONG : 146.0 W     SAMPLING INTERVAL: 15.00 MINUTES
FILENO: Distribution of Longshore Current and Sedimentation
```

```

STN : CG-3
START TIME: 0: 7 19/ 7/91
END TIME: 23:52 25/ 7/91
DEPT: 268 M
LAT : 70.9 N
LONG : 146.0 W
TAPE :
SAAMPLING INTERVAL: 15.00 MINUTES

```

LONGSHORE CAMP (CM/SEC)

**OFFSHORE COMP
(CMA/SEC)**

22	20	18	16	14	12	10	8	6	4	2	0	0	2	4	6	8	10	12	14	16	18	20	22	24	26	
-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	0	2	4	6	8	10	12	14	16	18	20	22	24	26

Iteration	Convergence	Time (sec)	Iteration	Convergence	Time (sec)
24	0	6	24	0	6
22	-8	4	22	-8	4
20	-10	2	20	-10	2
18	-12	0	18	-12	0
16	-14	0	16	-14	0
14	-16	0	14	-16	0
12	-18	0	12	-18	0
10	-20	0	10	-20	0
8	-22	0	8	-22	0
6	-24	0	6	-24	0
4	-26	0	4	-26	0
2	-28	0	2	-28	0
0	-30	0	0	-30	0

4
15 25 18 20

2
32 50 16 11

2
21 23 4

5
47
29
22
16
4

19 26 34 45 15 2

15 24 33 25 21 2

378202

23

2

12
121
177
141
164
51
6

[illegible]

STM : C6-3
START TIME :

LONGMORE COMP (CM/SEC)																								
-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60
TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65

0

[illegible]

STN : C6-3										FREQUENCY DISTRIBUTION OF										SPEED										AND DIRECTION																			
START TIME: 10: 7										DEPT: 11/ 4/81										LAT : 70.9 N										LONG : 145.0 W																			
END TIME: 10: 7										END TIME: 11/ 4/81										END TIME: 1:52										END TIME: 2/ 8/91																			
TAPES : 32/ 0										TAPES : 32/ 0										TAPES : 32/ 0										TAPES : 32/ 0																			
SAMPLING INTERVAL: 15.00 MINUTES										SAMPLING INTERVAL: 15.00 MINUTES										SAMPLING INTERVAL: 15.00 MINUTES										SAMPLING INTERVAL: 15.00 MINUTES																			
DIRECTION	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
(DEG)	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90	0	10	20	30	40	50	60	70	80	90
	0	10	20	30	40	50	60	70	80	0	10	20	30	40</																																			

DATA APPENDIX 6

Percent Occurrences of Direction and Speed for USCG Current Meters

AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

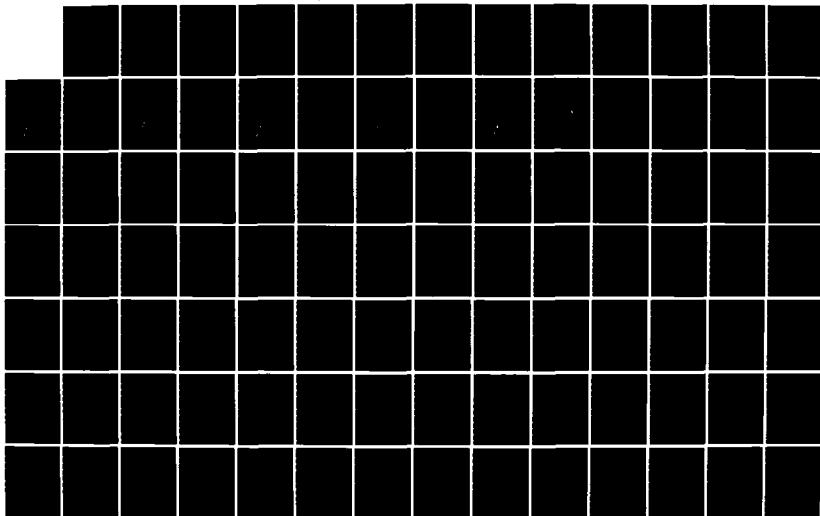
5/6

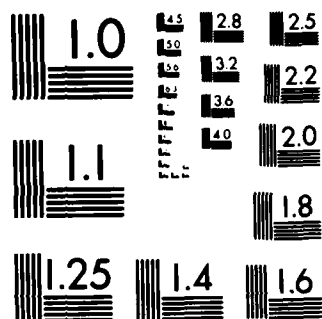
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

NL



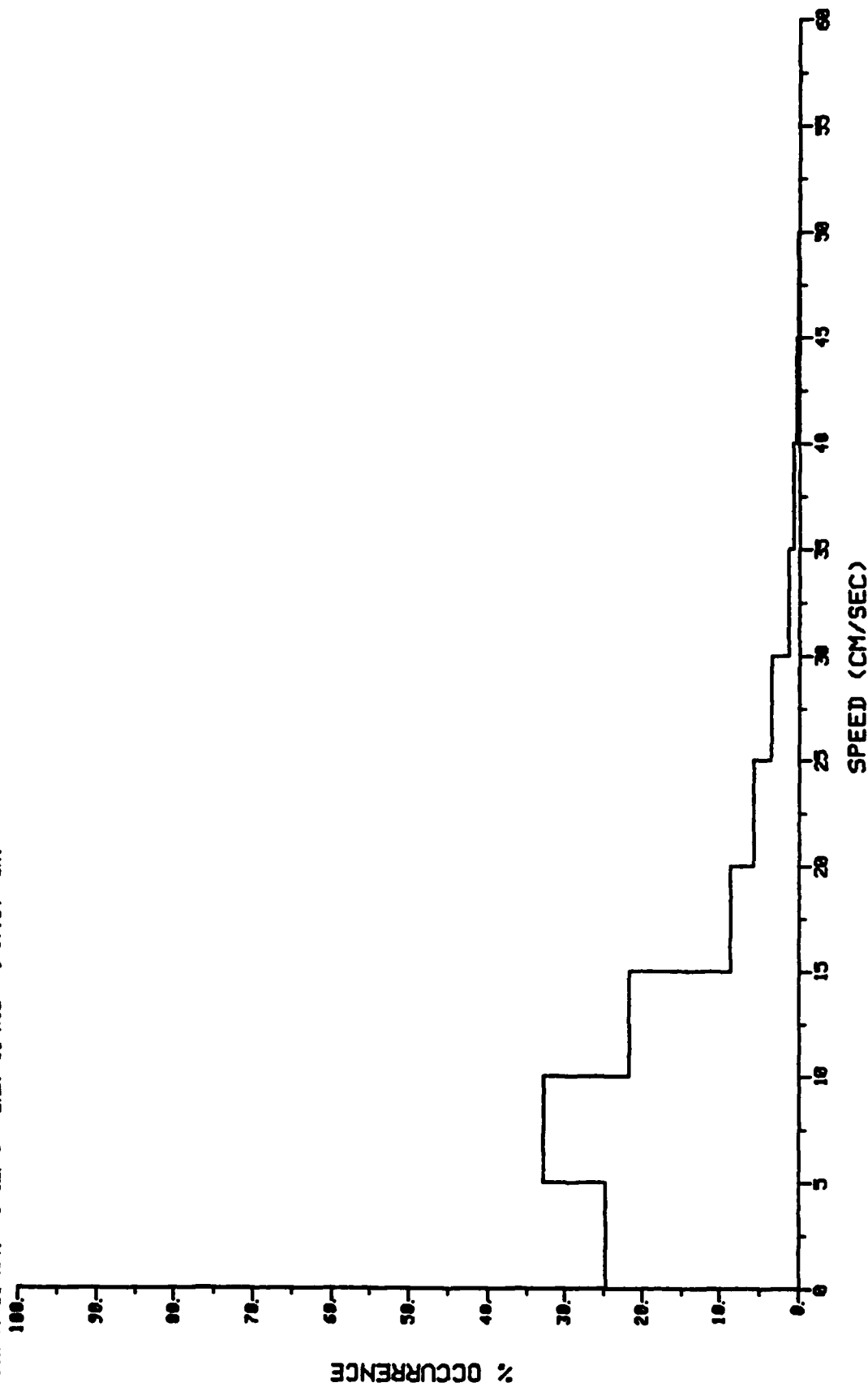


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

USCG BEAUFORT SEA STUDY

START: 01 APR 9 12.9 END: 01 AUG 1 17.54 GMT

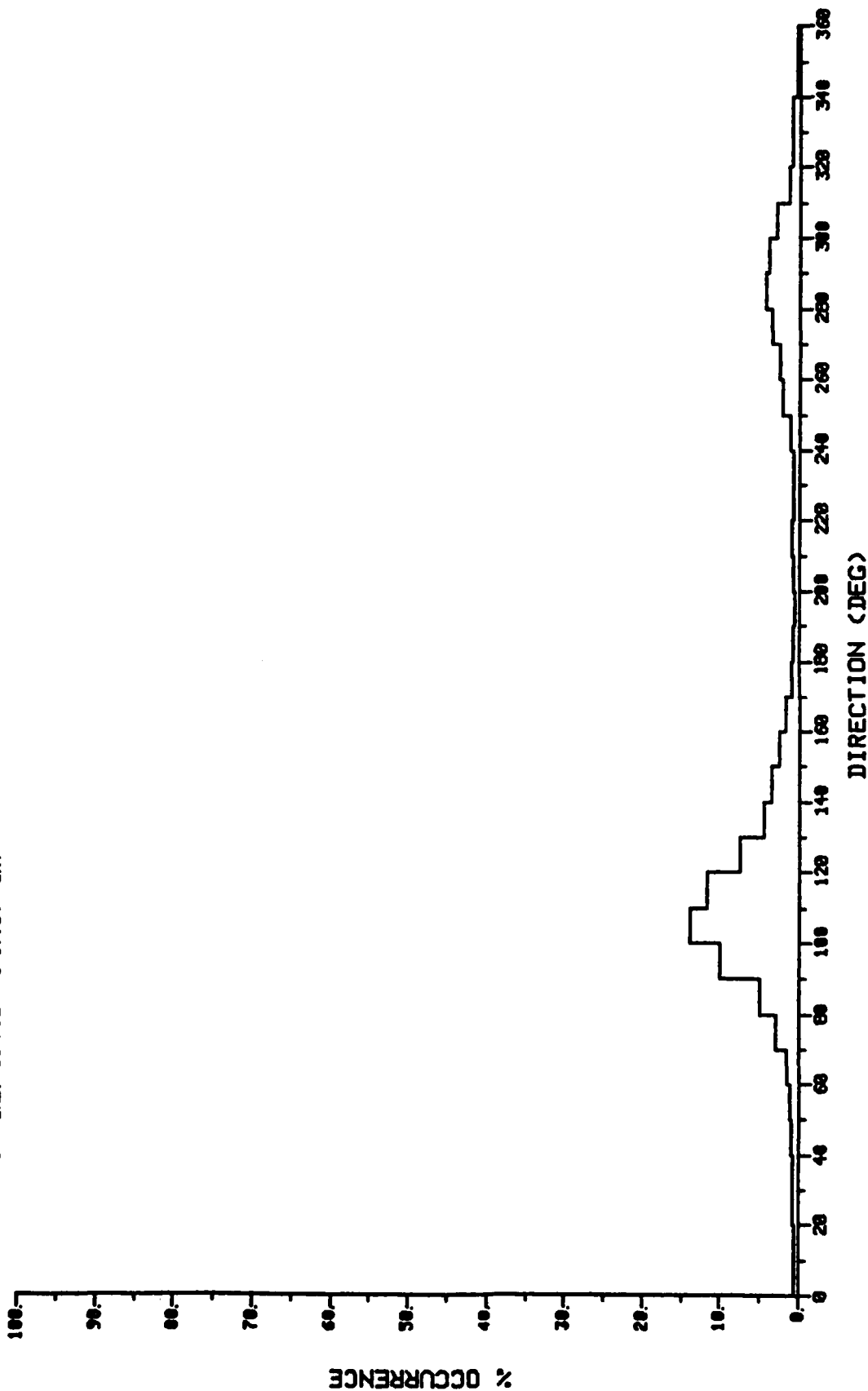
STNID = CG-1
DEPTH = 48
TYPE = 11/0



USCG BEAUFORT SEA STUDY

START: 01 APR 9 12.9 END: 01 AUG 1 17.94 GMT

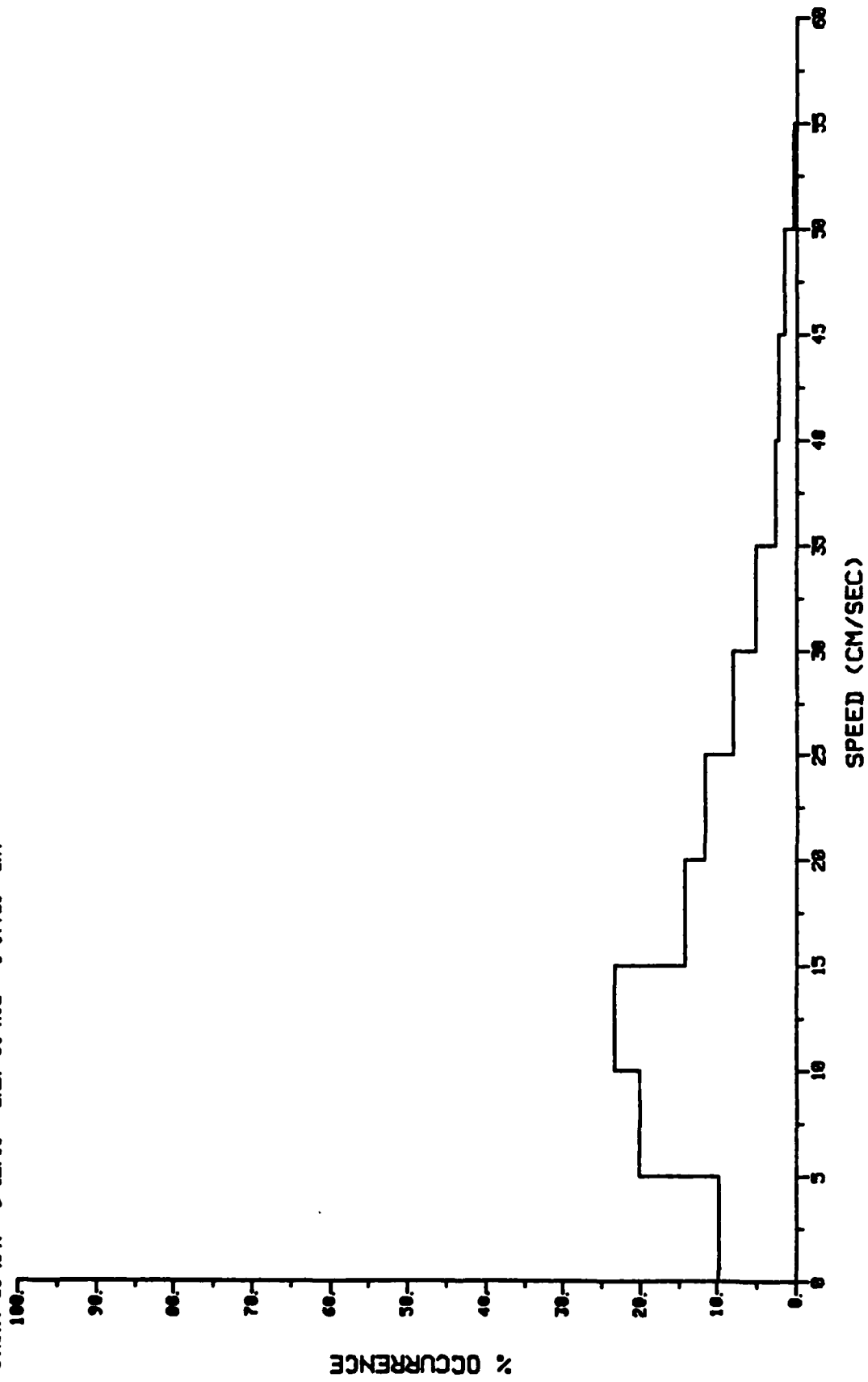
STN13 = CG-1
DEPTH = 48
TAPE = 11/ 0



USCG BEAUFORT SEA STUDY

STATION = 02-1
DEPTH = 130
TIME = 12/0

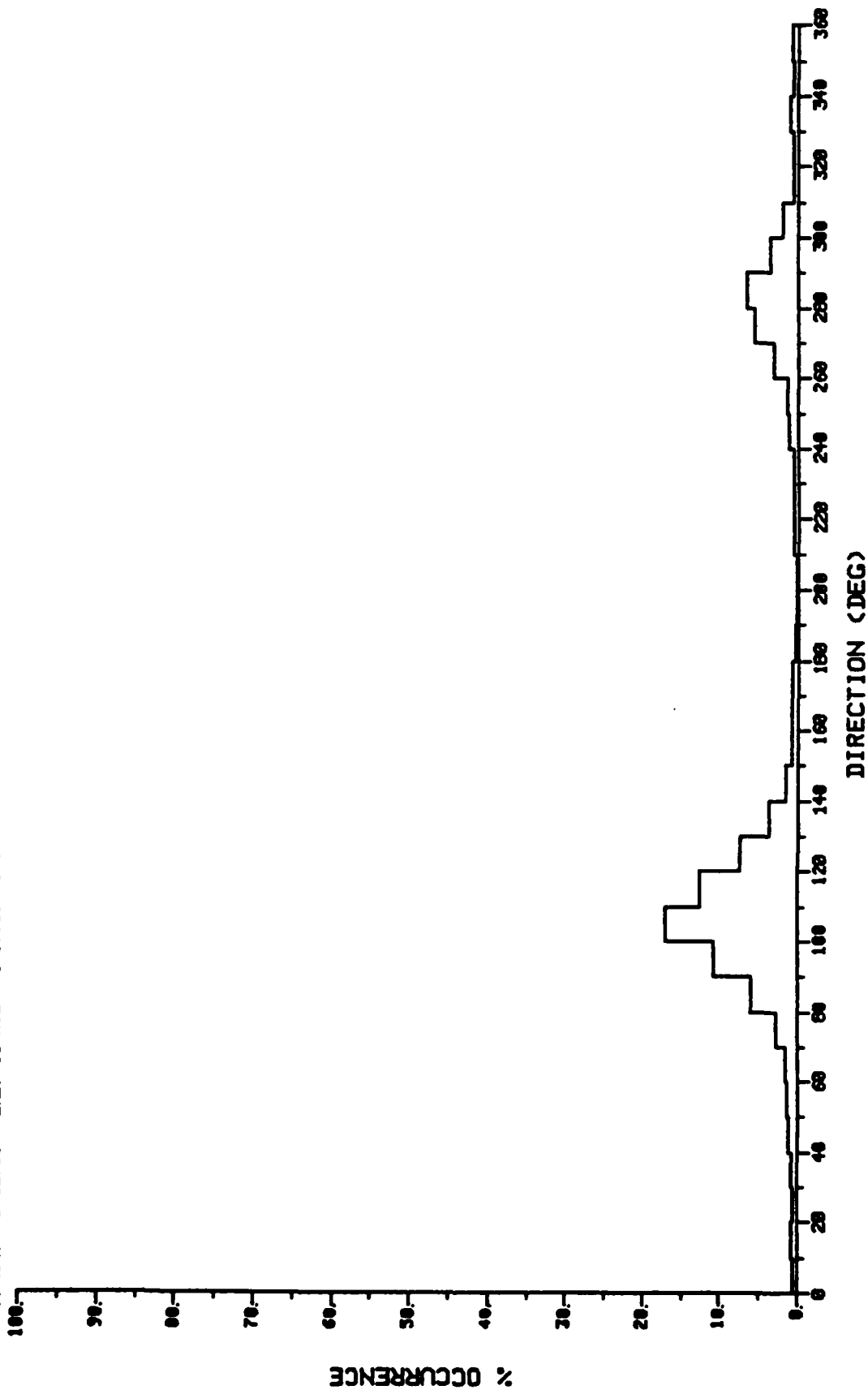
START. 01 APR 9 12.10 END. 01 AUG 1 17.55 GMT



USCG BEAUFORT SEA STUDY

START, 01 APR 9 12.10 END, 01 AUG 1 17.55 GMT

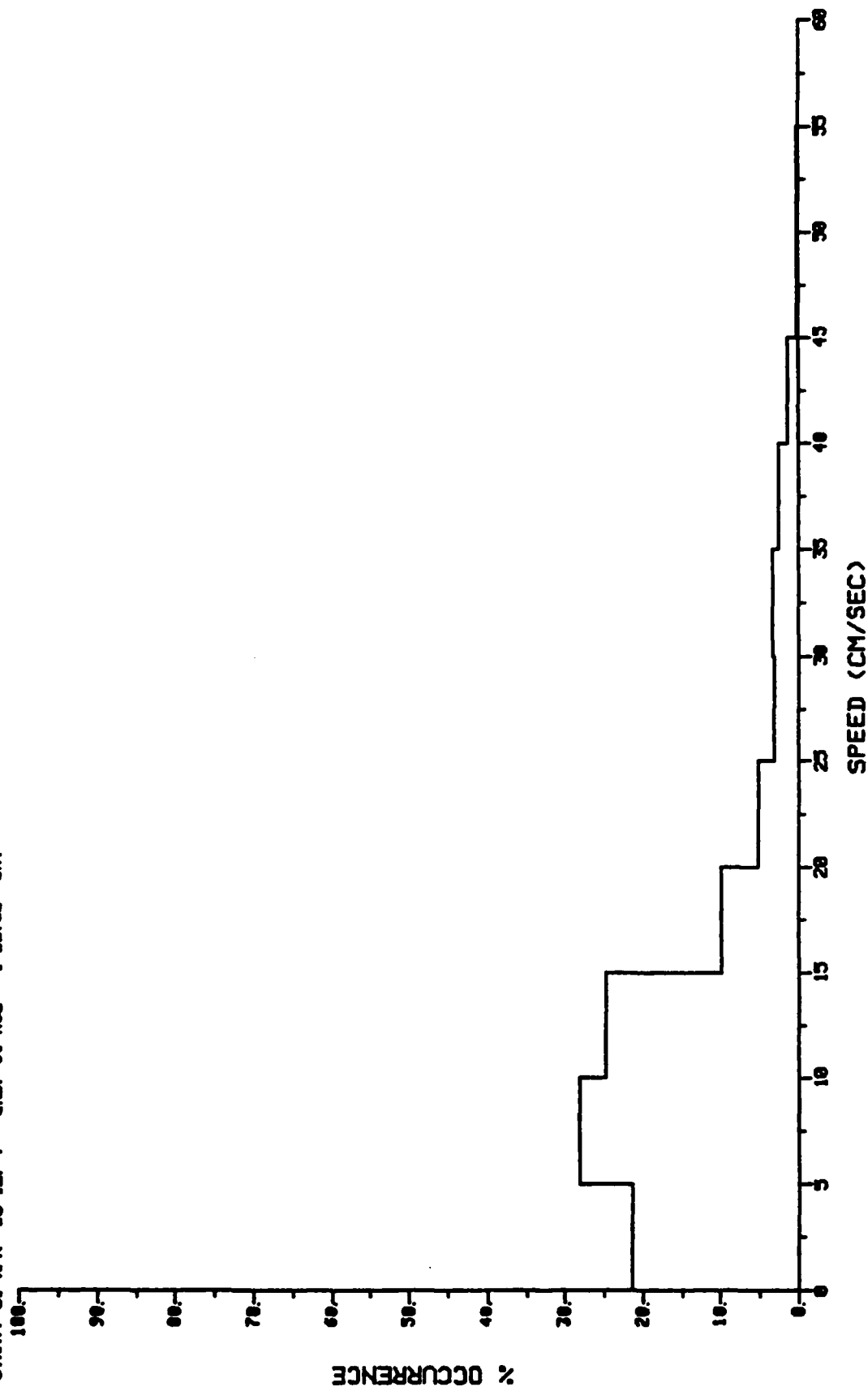
STNID = 00-1
DEPTH = 150
TIME = 12/ 0



USCG BEAUFORT SEA STUDY

START, 01 APR 10 12.7 END, 01 AUG 1 22.52 GMT

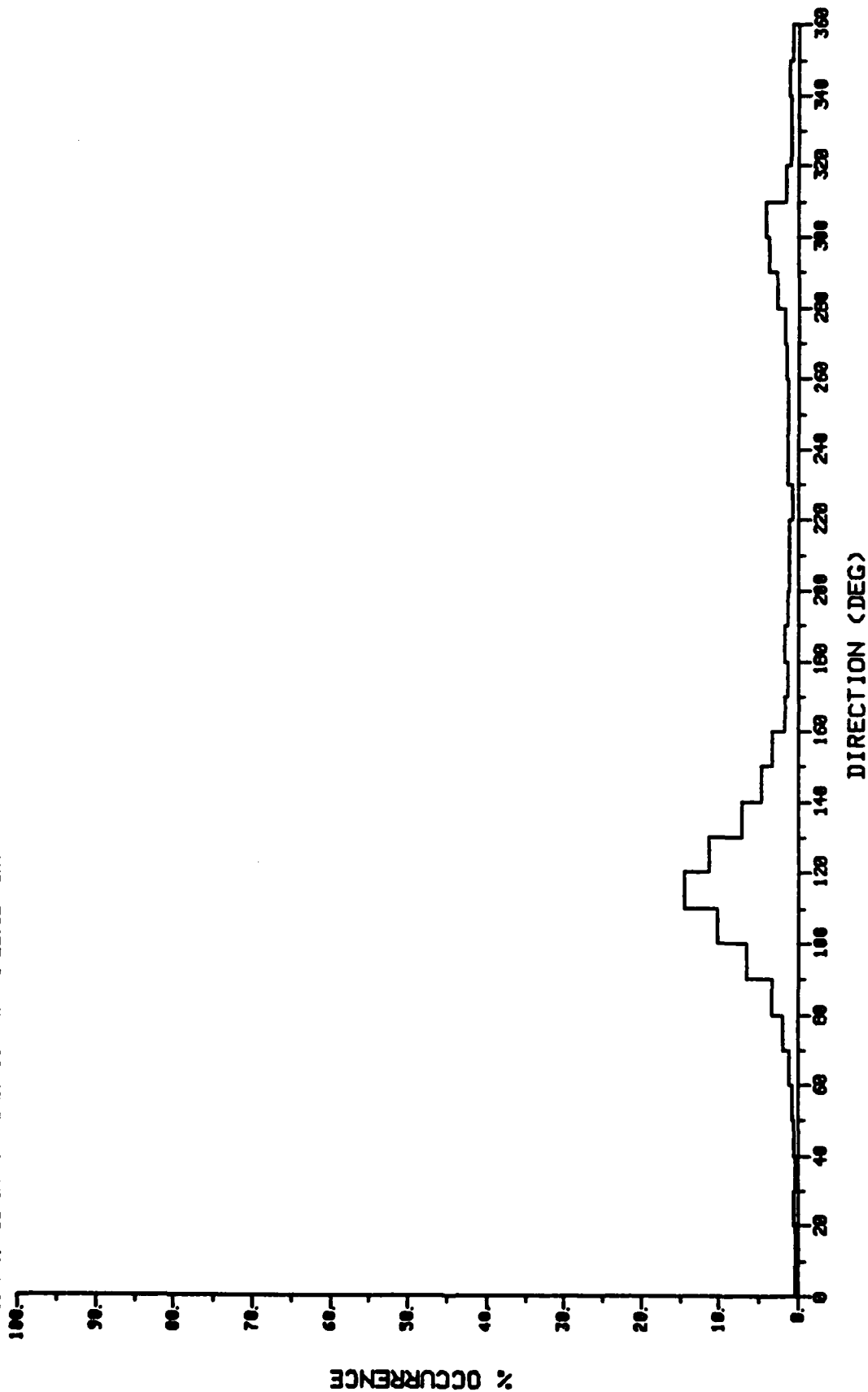
STWID = CG-2
DEPTH = 40
TYPE = 21/ 0



USCG BEAUFORT SEA STUDY

START: 01 APR 10 12.7 END: 01 AUG 1 22:52 GMT

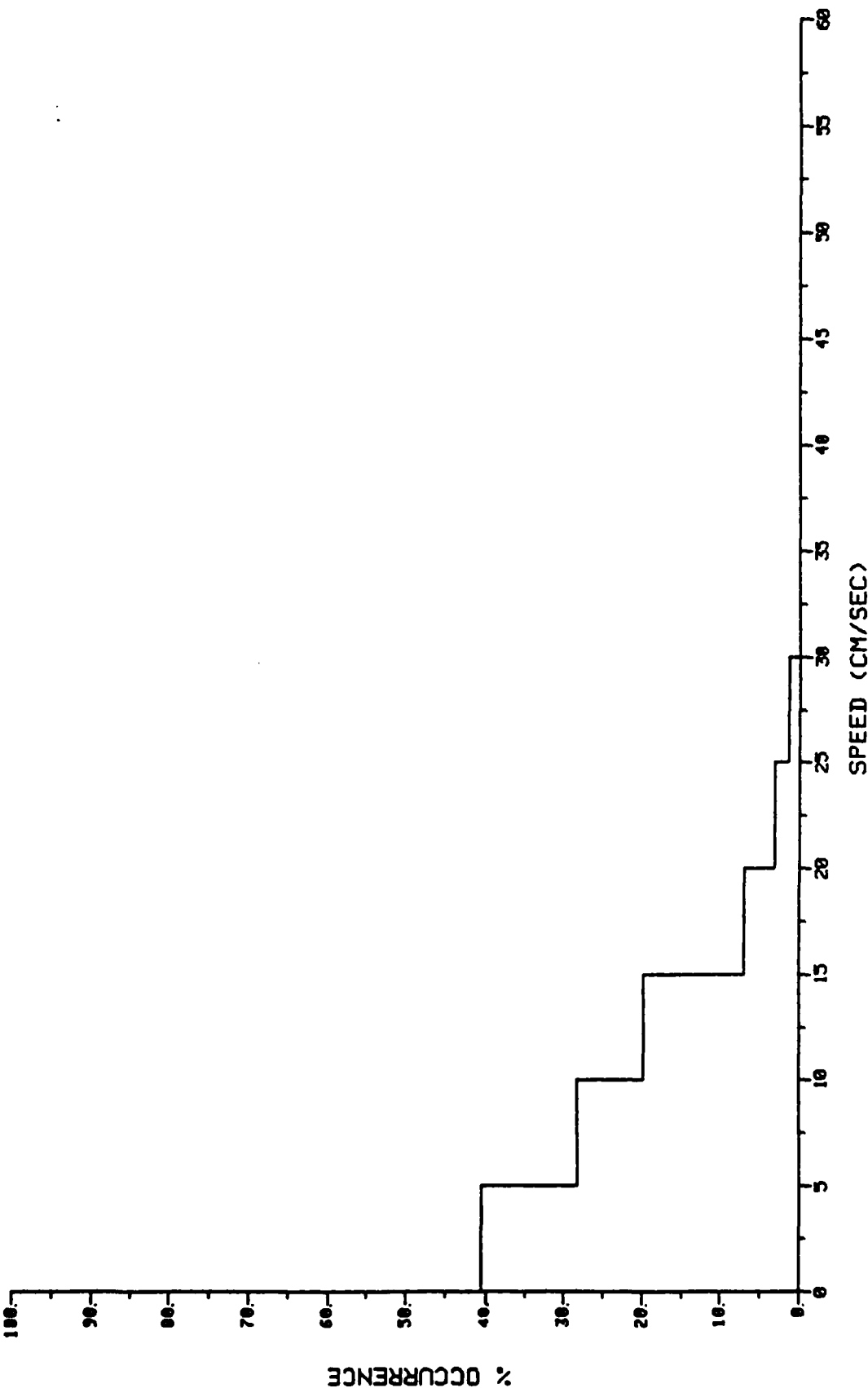
STN13 = CC-2
DEPTH = 48
TYPE = 21/ 0



USCG BEAUFORT SEA STUDY

START: 01 APR 10 12. 0 END: 01 JUN 3 2.38 GMT

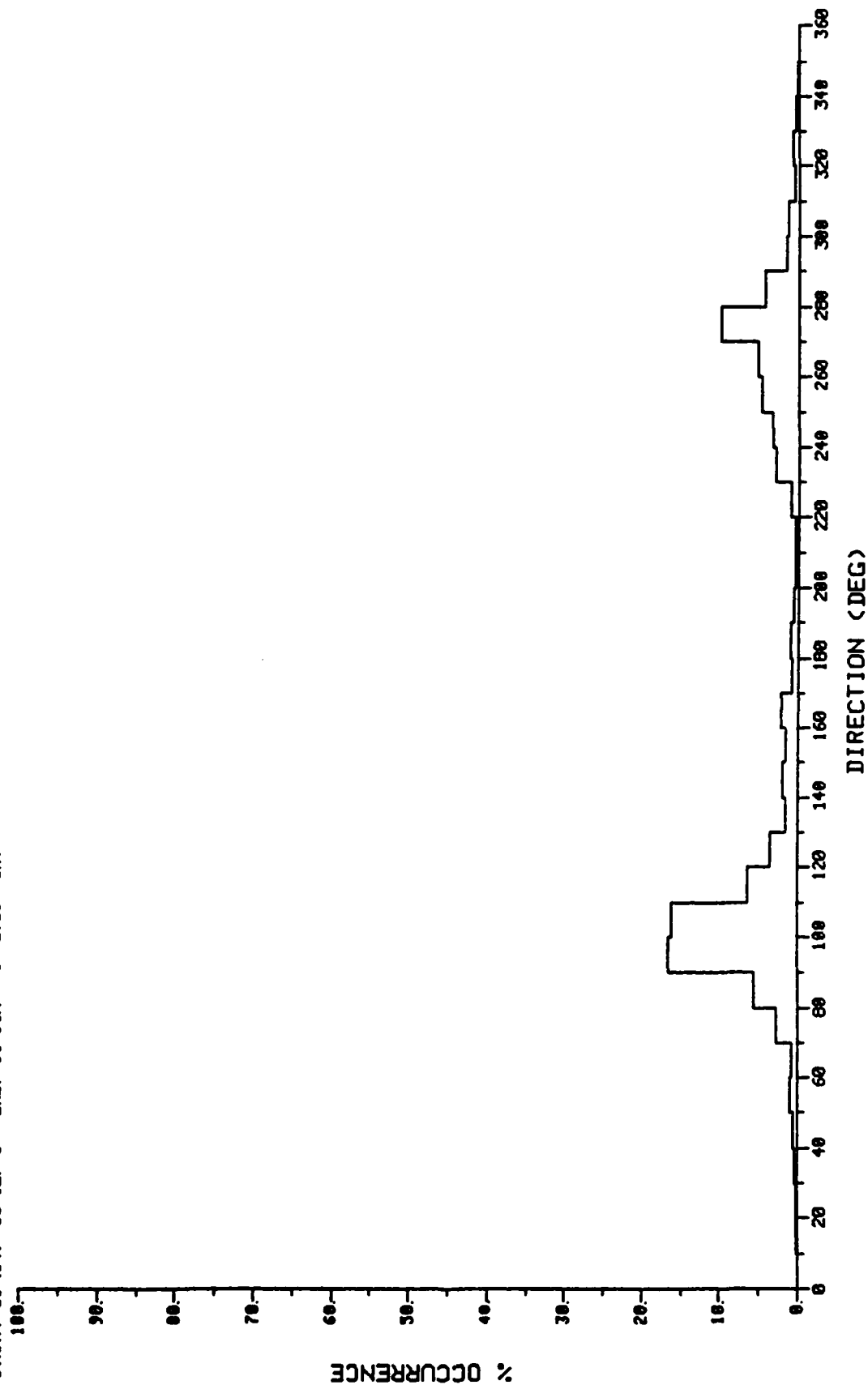
STNID = CC-2
DEPTH = 268
TAPE = 22/ 0



USCG BEAUFORT SEA STUDY

START: 01 APR 10 12.0 END: 01 JUN 3 2.30 GMT

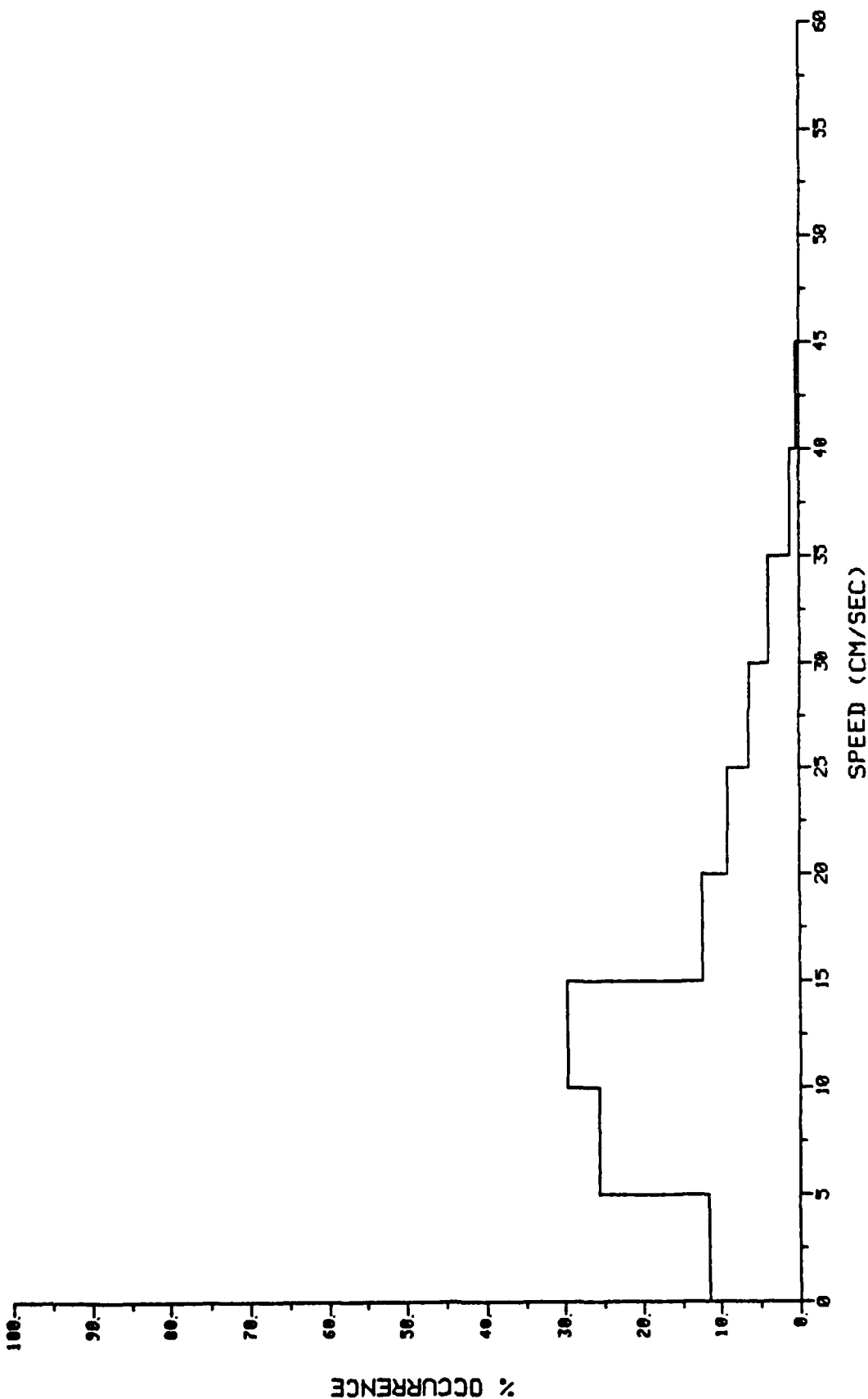
STNID = CC-2
DEPTH = 268
TIDE = 22/ 0



USCG BEAUFORT SEA STUDY

START, 01 APR 11 10, 7 END, 01 AUG 2 1.52 GMT

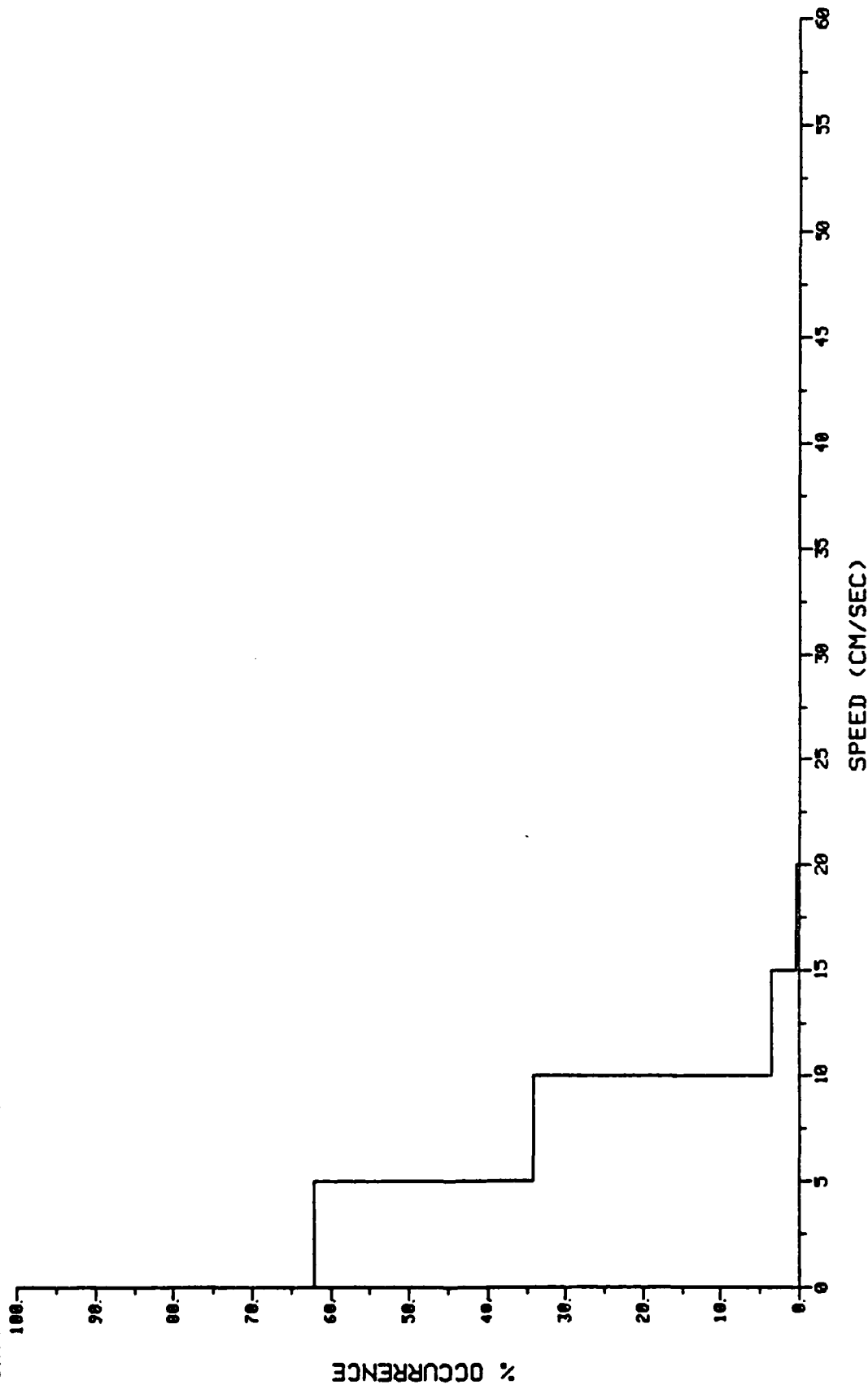
STNID = 00-3 40
DEPTH =
TAPE = 31/ 0



USCG BEAUFORT SEA STUDY

START, 81 APR 11 10. 7 END, 81 AUG 2 1.52 GMT

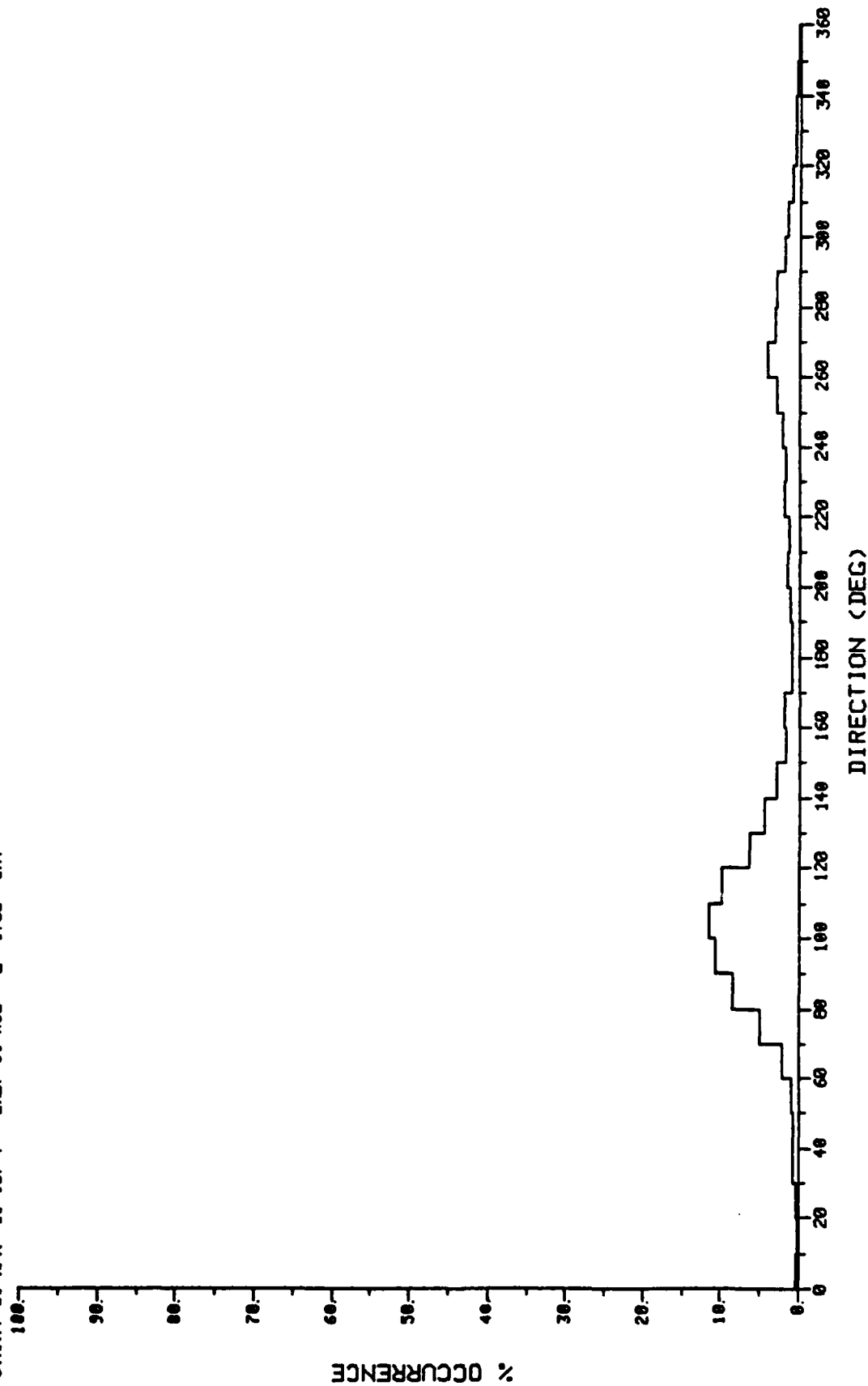
STNID = CG-3
DEPTH = 268
TAPE = 32/ 0



USCG BEAUFORT SEA STUDY

STATION = CC-3
DEPTH = 268
TIME = 32/ 0

START, 01 APR 11 10, 7 END, 01 AUG 2 1,52 GMT



DATA APPENDIX 7

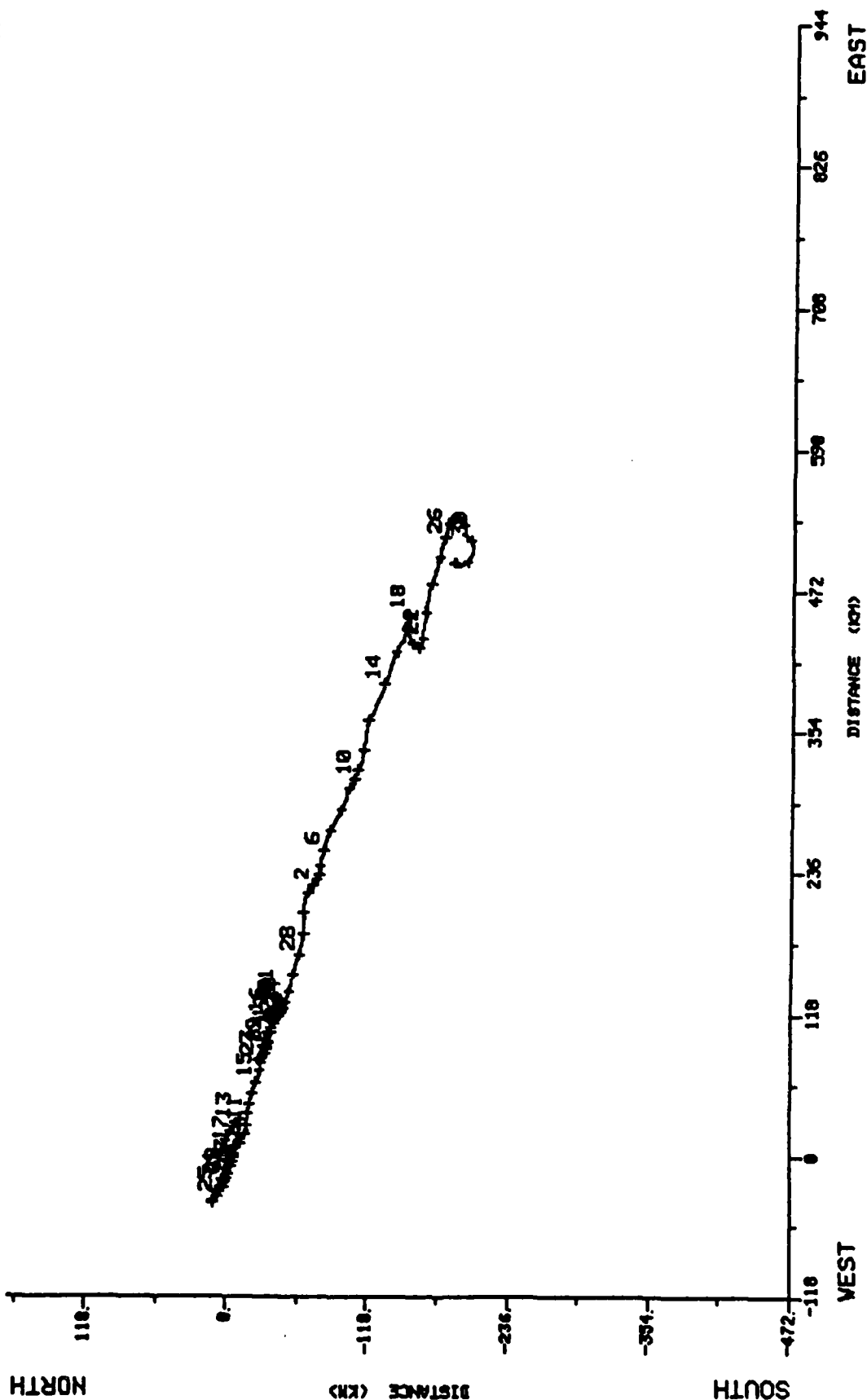
Progressive Vector Diagrams for USCG Current Meters.

The Congested Region at the Beginning of the Record
is Expanded as a Second PVD. The Period of Expansion
is Shown in the Title.

USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 9 12.9 END. 01 AUG 1 17.54 GMT

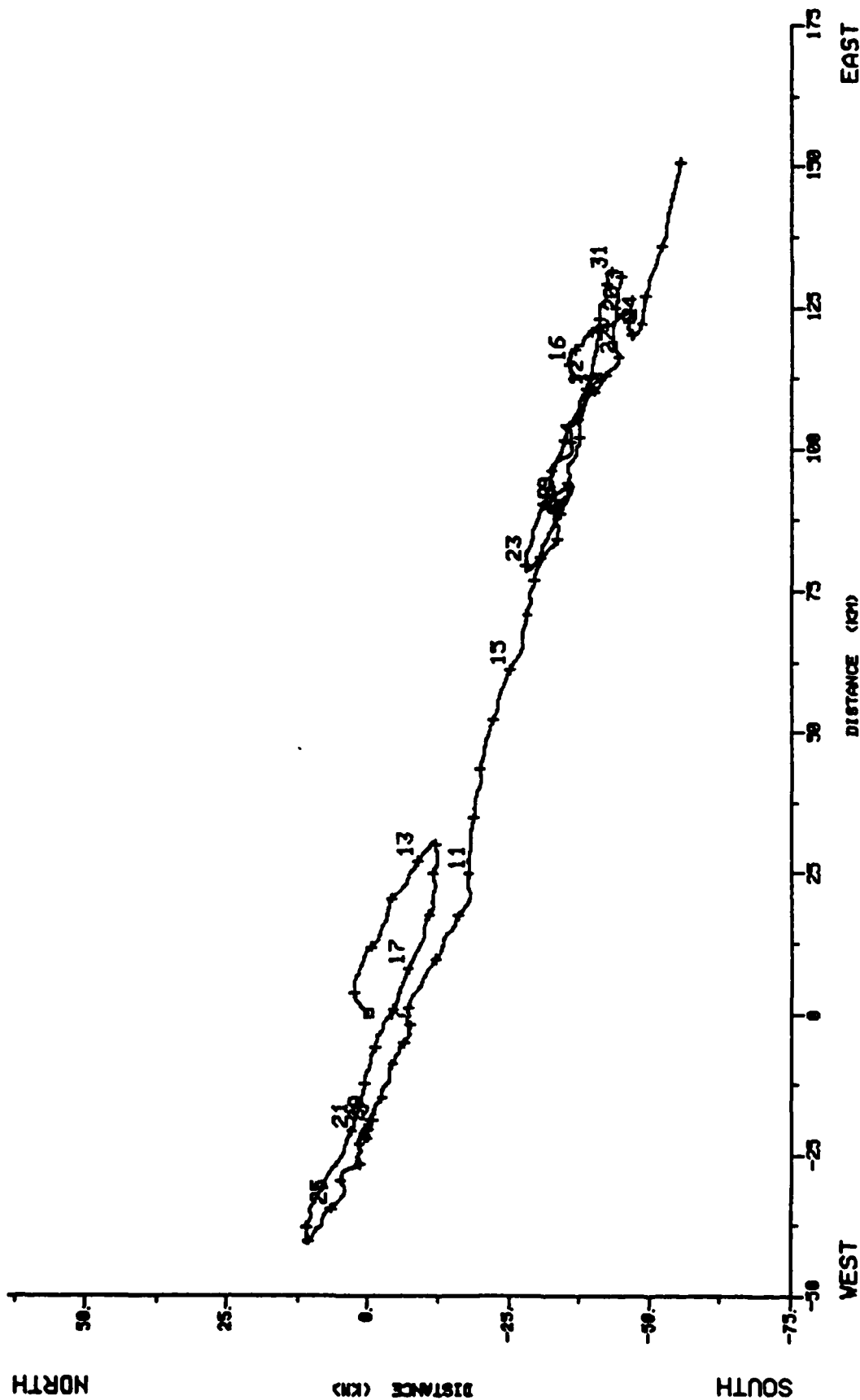
STN19 - CC-1
DEPTH = 48
TIME = 11/ 8
LABEL = DAYS



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START: 01 APR 9 12.9 END: 01 JUNE 27 12.9 GMT

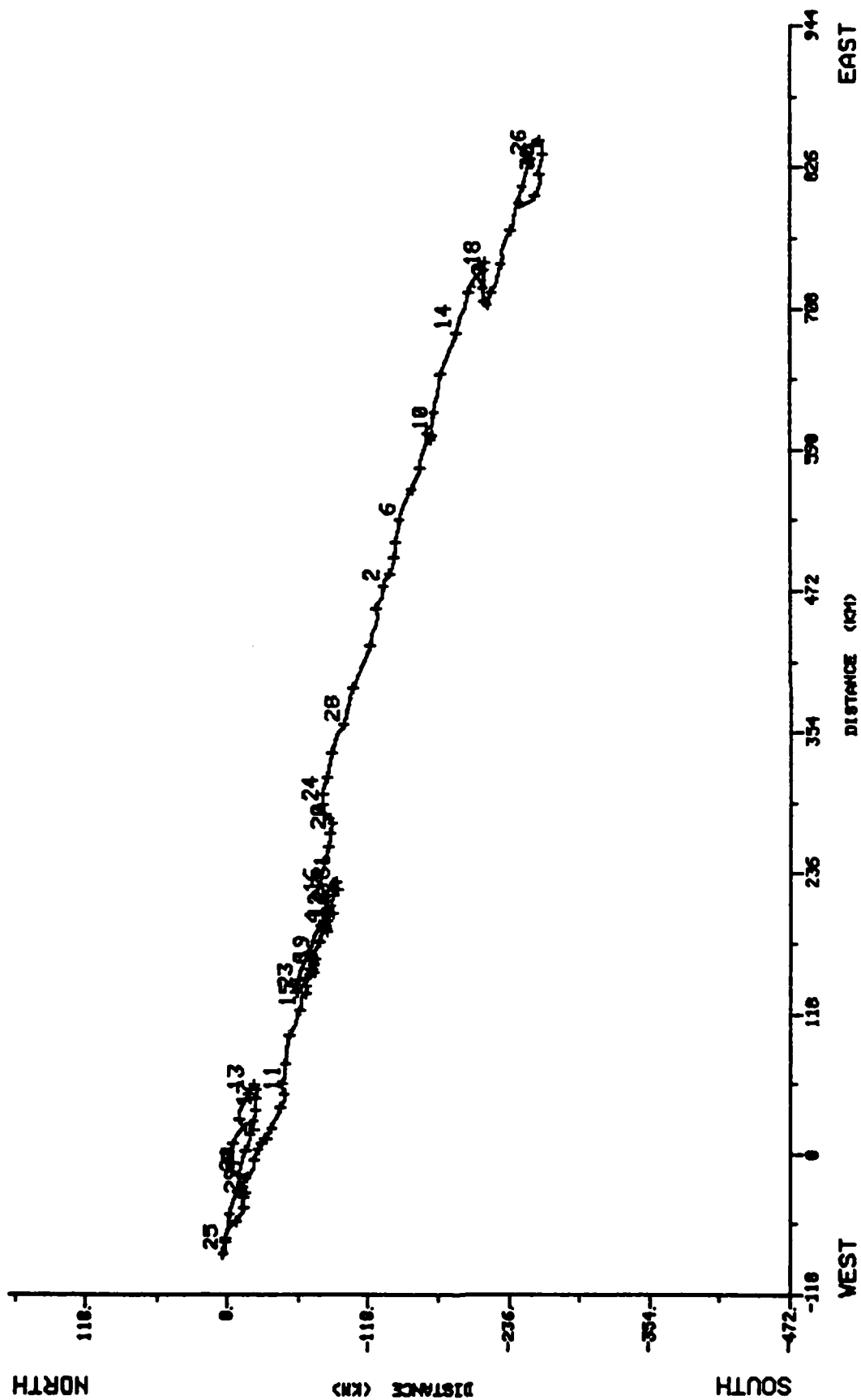
STNID - 00-1
DEPTH - 40
TAPE - 11/
LABEL - DAYS



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 9 12.10 END. 01 AUG 1 17.55 GMT

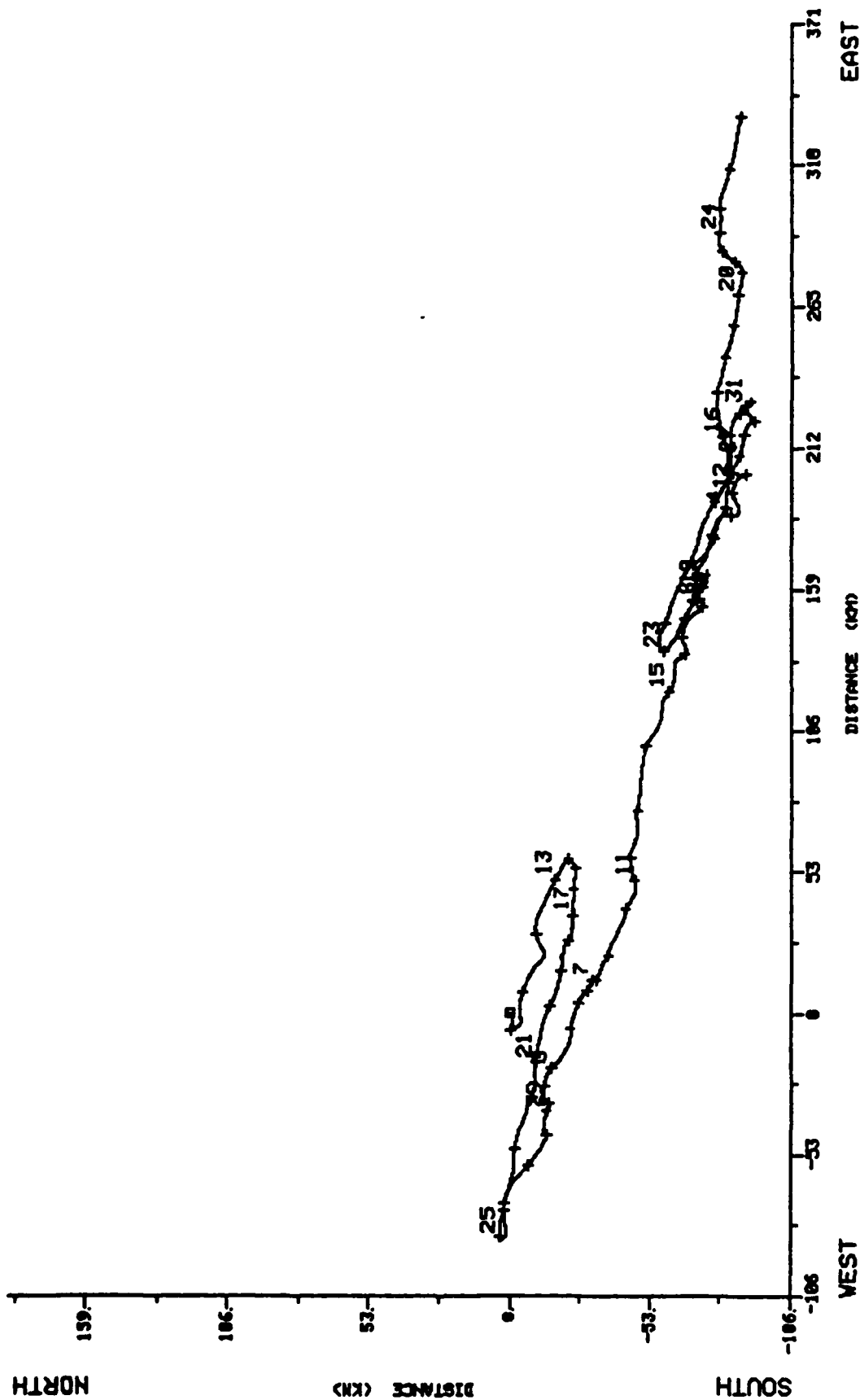
STN13 - CG-1
DEPTH = 150
TAPE = 12/0
LABEL = 2049



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 9 12:10 END. 01 JUNE 27 12:10 GMT

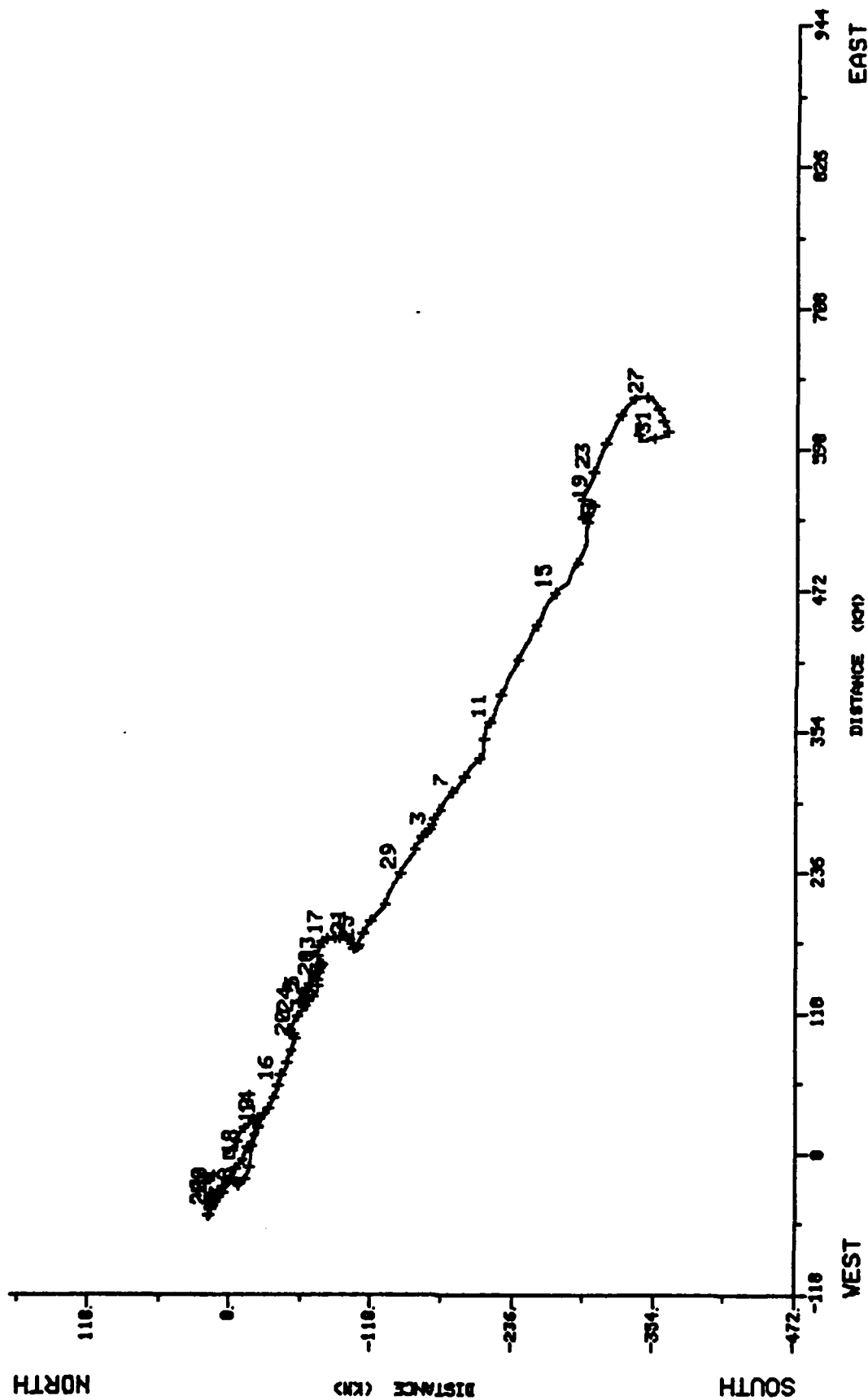
STN13 - CG-1
DEPTH = 150
TAPE = 12/ 0
LABEL = DAYS



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START: 01 APR 10 12.7 END: 01 AUG 1 22.52 GMT

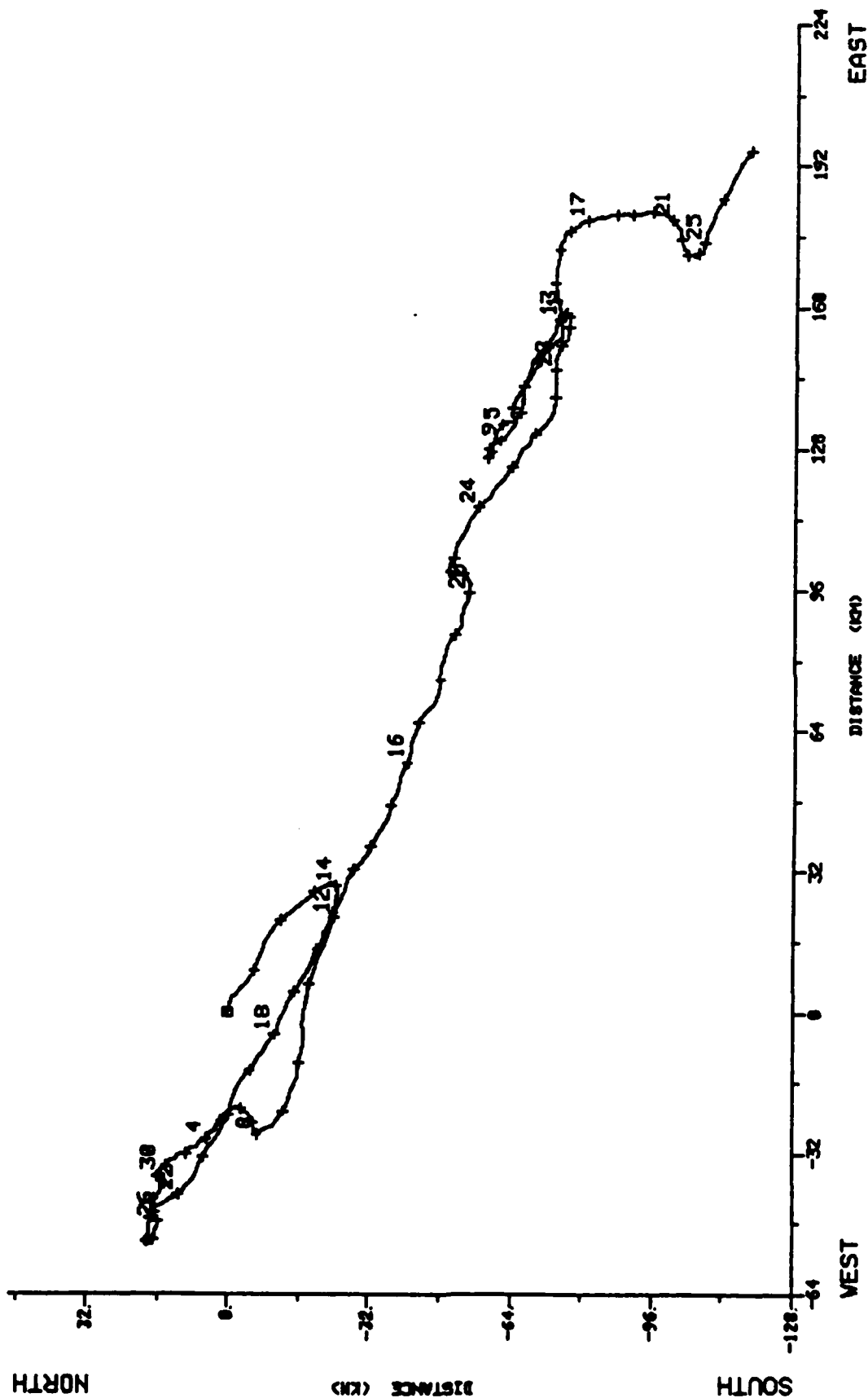
STN13 - CG-2 40
DEPTH - 21/ 0
TAPE - 21/ 0
LABEL - 2018



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 10 12. 7 END. 01 JUNE 27 12. 7 GMT

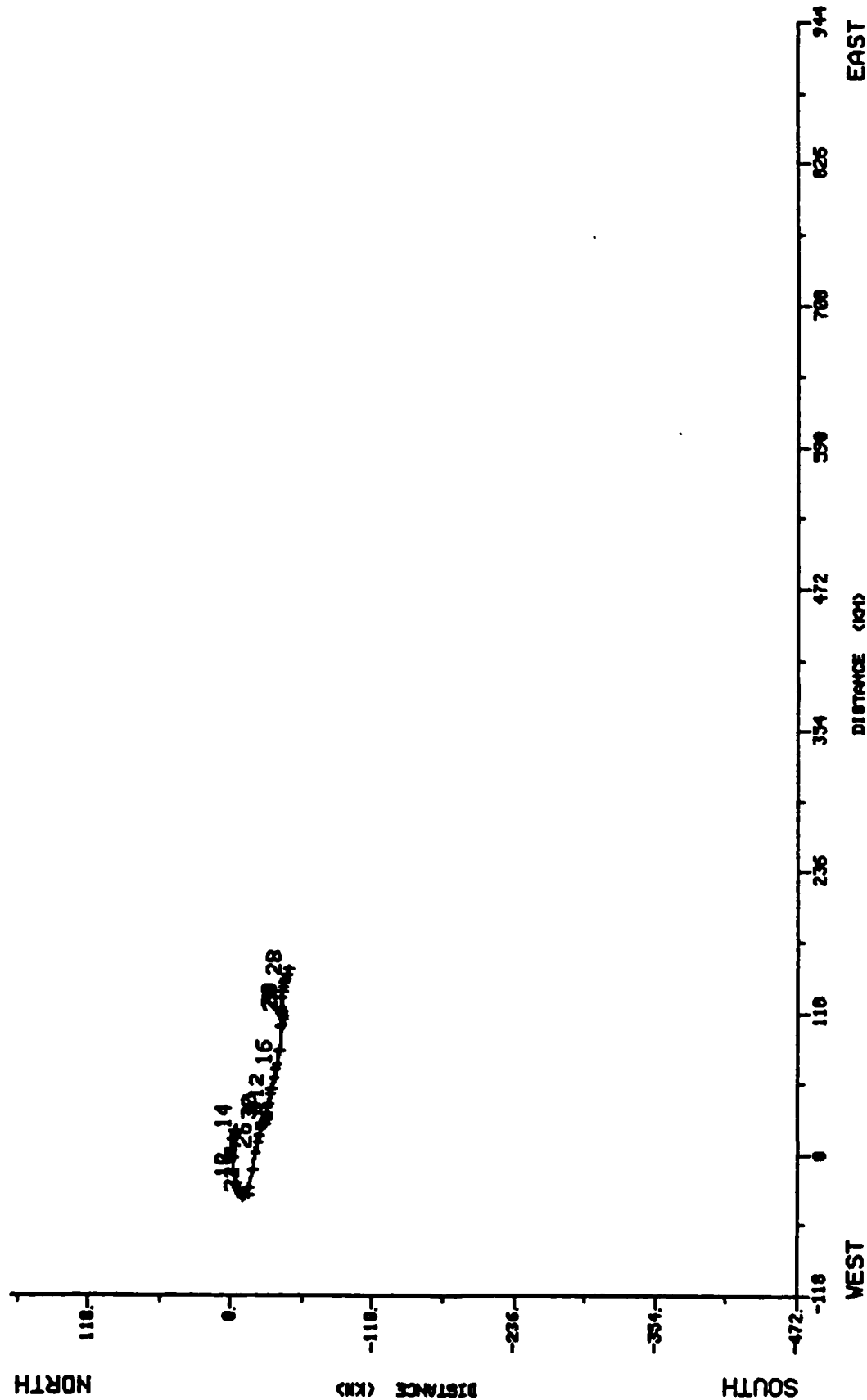
STN13 - CG-2 40
DEPTH = 21/ 0
TAPE = 21/ 0
LABEL = 2049



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 10 12. 0 END. 01 JUNE 3 2.30 GMT

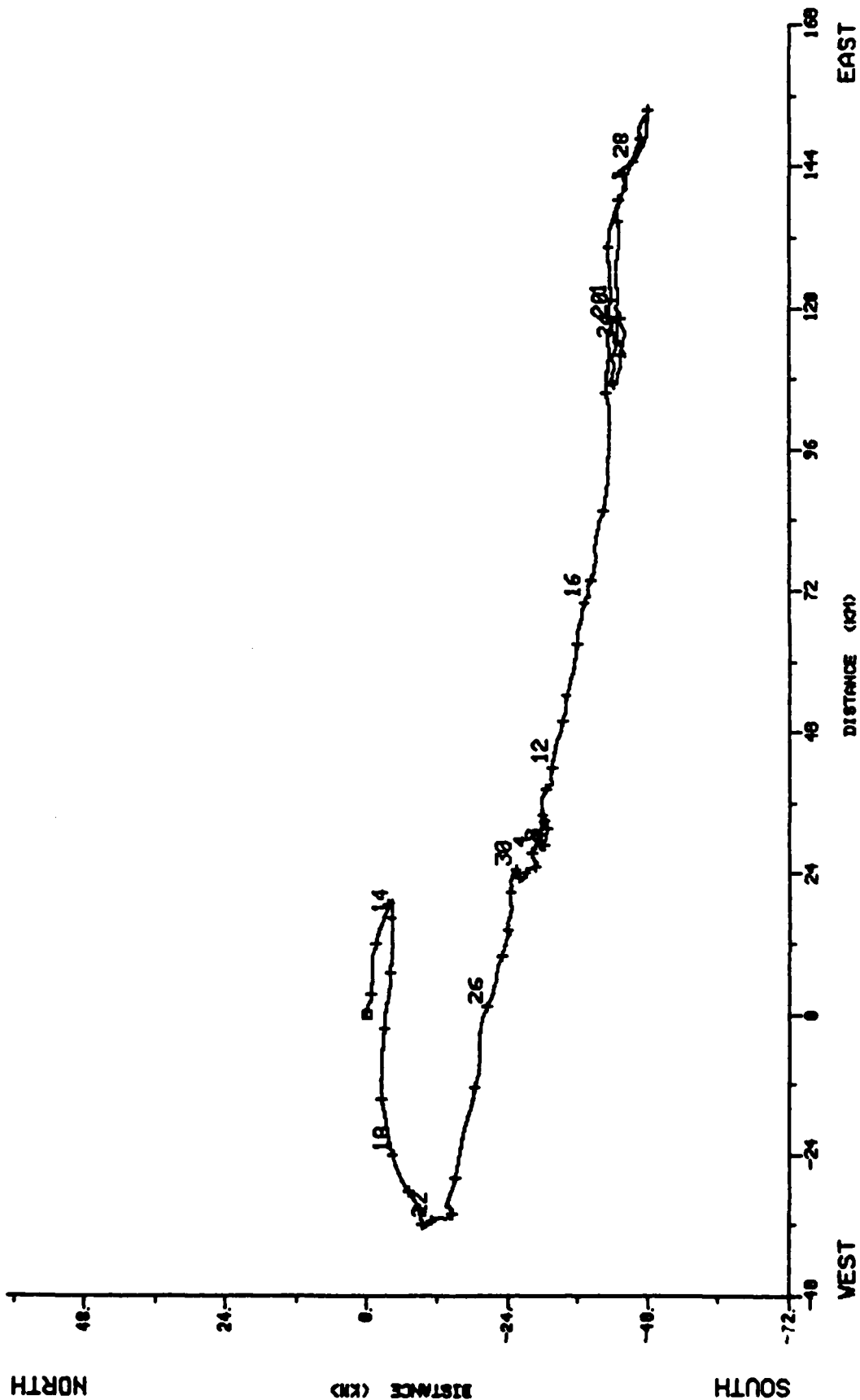
STN13 - 00-2
DEPTH = 268
TAPE = 22/ 8
LABEL = DAYS



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 10 12. 8 END. 01 JUNE 3 2.30 GMT

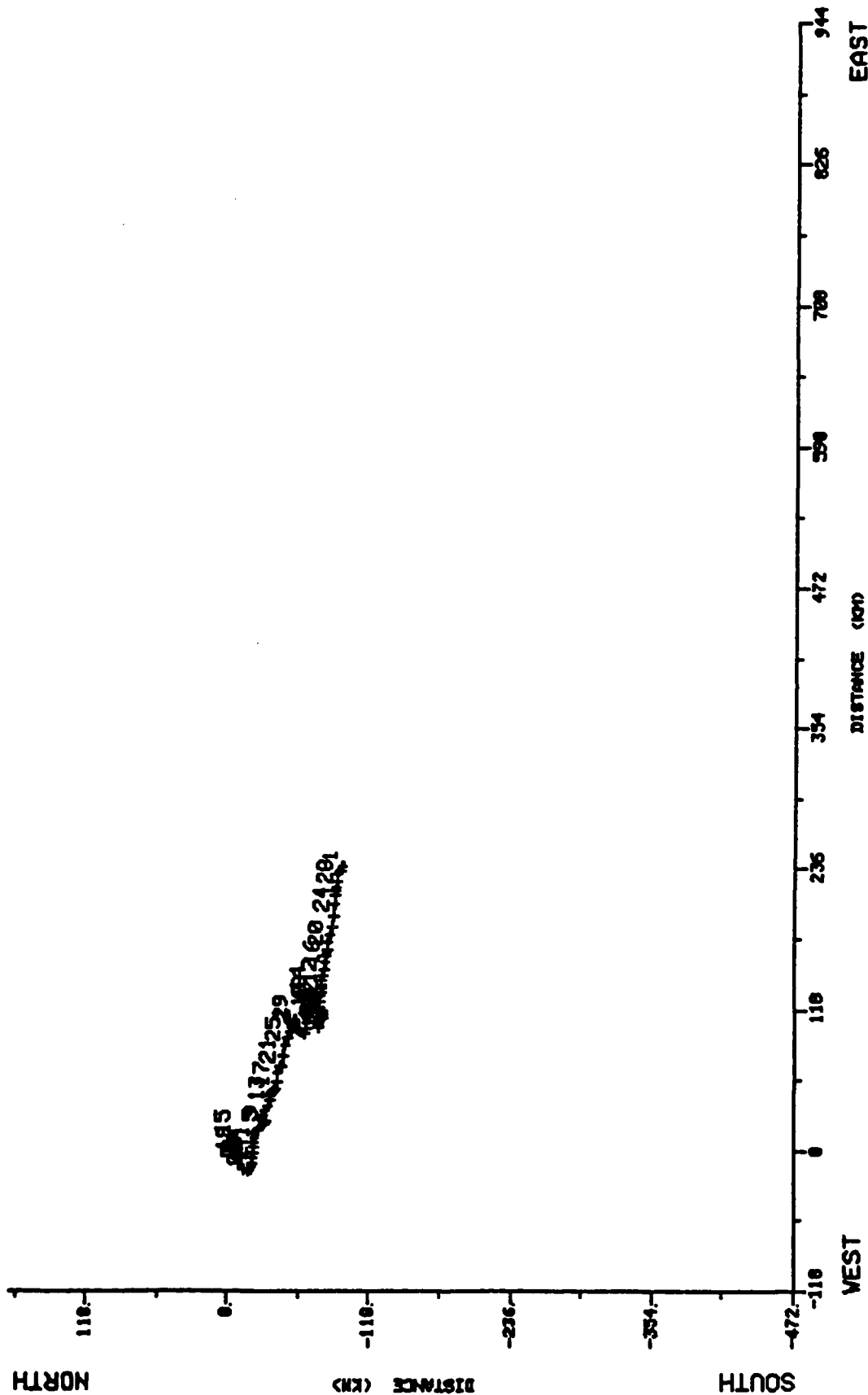
STN 13 - CG-2
DEPTH = 268
TAPE = 22/ 0
LABEL = 3448



USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 11 10. 7 END. 01 AUG 2 1.32 GMT

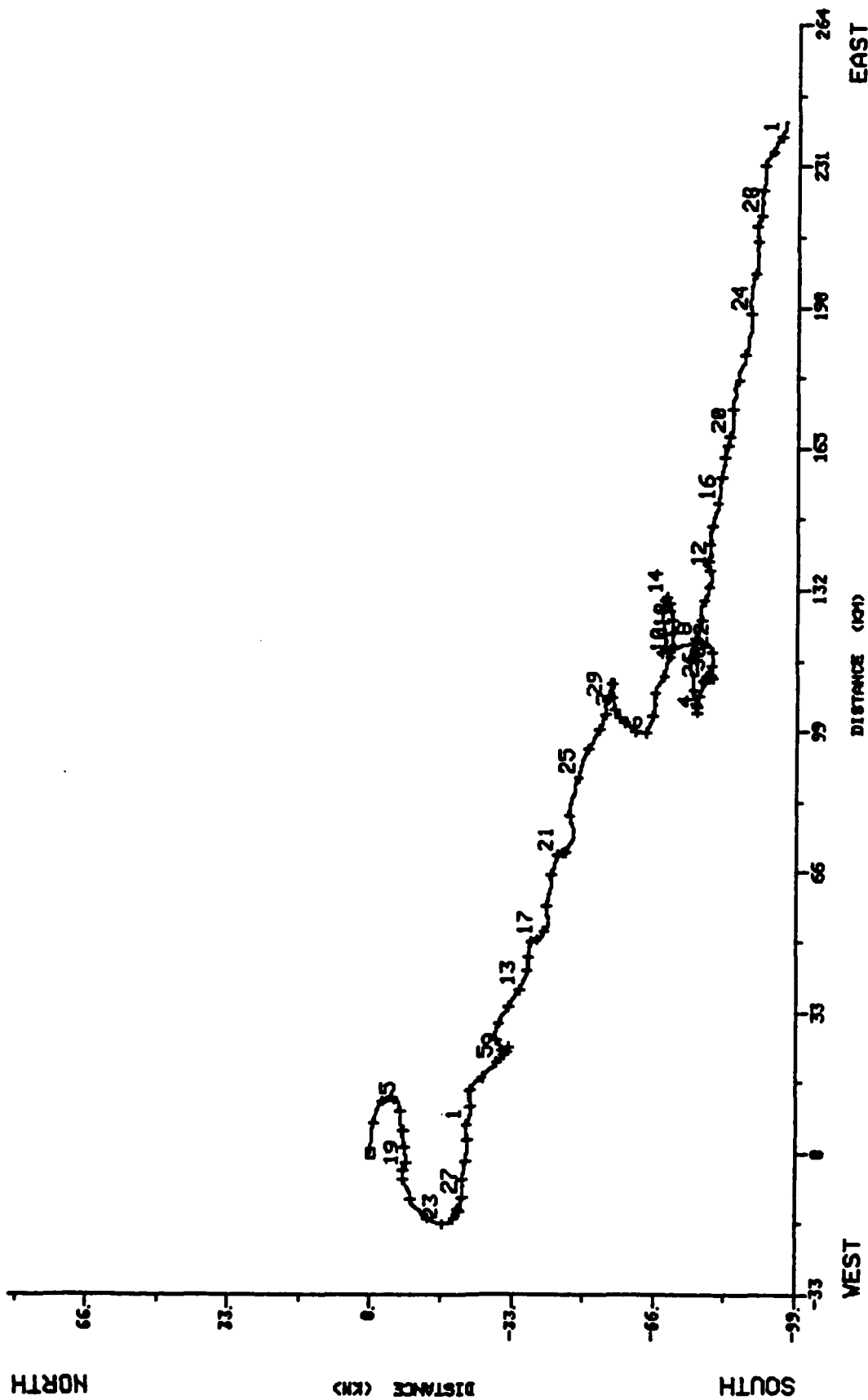
STN13 - CG-3
DEPTH - 268
TAPE - 32/ 0
LABEL - 3478

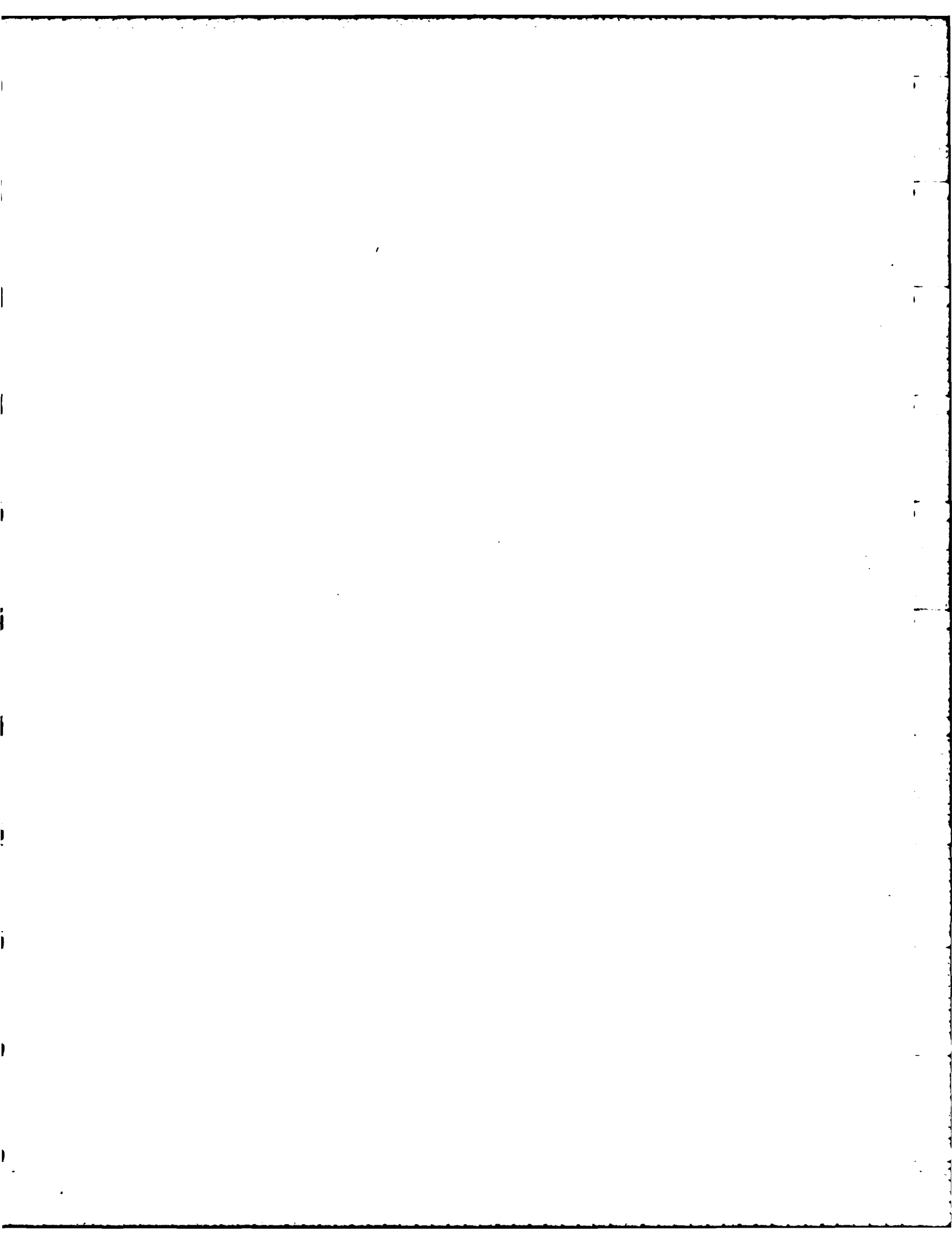


USCG BEAUFORT SEA STUDY

PROGRESSIVE VECTOR DIAGRAM START. 01 APR 11 10.7 END. 01 AUG 2 1.52 GMT

STN 13 - CG-3
DEPTH = 268
TAPE = 32/ 8
LABEL = 3478





DATA APPENDIX 8

Tidal Stream Analyses for USCG Current Meters

The amplitudes of the semi-major and semi-minor axes of the tidal ellipses are shown. INC is the inclination in degrees of the northern semi-major axis counter-clockwise from east. G. is the Greenwich phase of the rotating velocity vector. G+ is the Greenwich phase of the anti-clockwise rotating vector of constant magnitude which added to the clockwise rotating vector of constant magnitude yields the tidal ellipse. G- is the Greenwich phase of the clockwise rotating vector of constant magnitude.

USCG BEAUFORT SEA STUDY

ANALYSIS RESULTS IN CURRENT ELLIPSE FORM

AMPLITUDES HAVE BEEN SCALED ACCORDING TO APPLIED FILTERS

STN: CG-11

LAT: 70 53 0.0 N

DEPTH: 40 M

LONG: 145 55 0.0 W

START: 1300Z 9/ 4/81

END: 1700Z 1/ 8/81

	NAME	FREQUENCY (CY/HR)	MAJOR (CM/S)	MINOR (CM/S)	INC	G	G+	G-
	----	-----	-----	-----	---	---	---	---
1	ZO	0.00000000	5.263	0.000	159.1	180.0	20.9	339.1
2	MM	0.00151215	0.618	-0.080	143.4	94.7	311.3	238.0
3	MSF	0.00282193	6.645	0.120	163.8	35.4	231.5	199.2
4	ALP1	0.03439657	0.261	-0.196	21.7	138.0	116.2	159.7
5	2Q1	0.03570635	0.440	-0.213	146.6	316.7	170.1	103.3
6	Q1	0.03721850	0.397	-0.164	106.7	18.7	272.1	125.4
7	O1	0.03873065	0.488	-0.395	109.0	173.5	64.5	282.6
8	NO1	0.04026859	0.245	-0.037	9.9	53.9	44.0	63.9
9	K1	0.04178075	0.138	-0.097	31.7	298.3	266.6	330.1
10	J1	0.04329290	0.267	0.028	2.6	123.5	120.9	126.1
11	DO1	0.04483084	0.143	0.005	41.3	105.8	64.4	147.1
12	UPS1	0.04634299	0.275	-0.070	16.7	247.0	230.3	263.8
13	EPS2	0.07617732	0.276	-0.142	139.4	270.0	130.6	49.4
14	MU2	0.07768947	0.378	-0.192	90.3	119.7	29.4	210.0
15	N2	0.07899925	0.090	0.016	1.2	3.8	2.6	5.0
16	M2	0.08051140	1.044	-0.916	81.9	3.6	281.7	85.5
17	L2	0.08202355	0.117	0.050	72.3	43.6	331.3	115.9
18	S2	0.08333333	0.362	-0.291	81.5	101.2	19.8	182.7
19	ETA2	0.08507364	0.389	-0.115	63.3	225.6	162.3	288.9
20	MO3	0.11924206	0.193	-0.100	57.4	325.4	268.0	22.9
21	M3	0.12076710	0.121	-0.079	151.4	42.1	250.7	193.5
22	MK3	0.12229215	0.039	-0.024	77.5	163.3	85.8	240.9
23	SK3	0.12511408	0.080	0.013	88.9	84.5	355.6	173.5
24	MN4	0.15951066	0.070	-0.042	38.7	118.4	79.7	157.1
25	M4	0.16102280	0.046	-0.009	110.8	187.1	76.3	297.9
26	SN4	0.16233258	0.097	-0.036	94.8	11.2	276.4	105.9
27	MS4	0.16384473	0.092	-0.033	120.1	223.5	103.3	343.6
28	S4	0.16666667	0.069	0.010	1.8	61.0	59.2	62.8
29	2MK5	0.20280355	0.037	0.028	94.4	130.5	36.1	224.9
30	2SK5	0.20844741	0.048	-0.001	179.4	106.4	286.9	285.8
31	2MN6	0.24002205	0.036	-0.014	44.1	172.8	128.7	216.9
32	M6	0.24153420	0.061	-0.008	96.3	336.2	239.8	72.5
33	2MS6	0.24435613	0.064	-0.013	52.5	27.4	334.9	80.0
34	2SM6	0.24717806	0.041	-0.025	124.7	290.7	166.1	55.4
35	3MK7	0.28331494	0.015	0.005	97.5	61.7	324.3	159.2
36	M8	0.32204559	0.058	-0.029	107.2	279.2	172.0	26.5

USCG BEAUFORT SEA STUDY

ANALYSIS RESULTS IN CURRENT ELLIPSE FORM

AMPLITUDES HAVE BEEN SCALED ACCORDING TO APPLIED FILTERS

STN: CG-12

LAT: 70 53 0.0 N

DEPTH: 150 M

LONG: 145 55 0.0 W

START: 1300Z 9/ 4/81

END: 1700Z 1/ 8/81

NAME	FREQUENCY (CY/HR)	MAJOR (CM/S)	MINOR (CM/S)	INC	G	G+	G-
----	-----	-----	-----	---	---	---	---
1 Z0	0.00000000	8.184	0.000	163.0	180.0	17.0	343.0
2 MM	0.00151215	1.981	-0.355	154.1	160.1	6.0	314.3
3 MSF	0.00282193	10.231	0.010	163.5	45.4	241.9	208.9
4 ALP1	0.03439657	0.795	0.109	61.1	4.7	303.6	65.8
5 2Q1	0.03570635	0.610	0.110	95.5	38.4	302.9	133.9
6 Q1	0.03721850	0.350	-0.171	32.9	134.5	101.6	167.5
7 O1	0.03873065	0.888	-0.495	178.2	106.0	287.8	284.2
8 NO1	0.04026859	0.611	-0.426	30.9	132.8	101.9	163.7
9 K1	0.04178075	0.179	-0.163	59.3	234.8	175.6	294.1
10 J1	0.04329290	0.291	0.048	106.0	283.9	177.9	29.8
11 OO1	0.04483084	0.650	-0.269	118.8	70.1	311.2	188.9
12 UPS1	0.04634299	0.539	-0.268	178.5	66.5	248.1	245.0
13 EPS2	0.07617732	0.269	-0.175	31.4	237.5	206.1	268.9
14 MU2	0.07768947	0.391	-0.281	71.3	46.3	335.0	117.6
15 N2	0.07899925	0.159	0.017	72.3	103.3	31.0	175.6
16 M2	0.08051140	0.676	-0.304	114.9	276.6	161.7	31.5
17 L2	0.08202355	0.421	-0.088	142.9	242.2	99.3	25.2
18 S2	0.08333333	0.423	-0.012	64.2	49.8	345.6	114.0
19 ETA2	0.08507364	0.237	-0.046	91.9	150.5	58.6	242.4
20 MO3	0.11924206	0.169	-0.032	37.6	53.6	16.1	91.2
21 M3	0.12076710	0.105	-0.027	94.6	11.9	277.2	106.5
22 MK3	0.12229215	0.101	0.012	83.3	215.1	131.8	298.5
23 SK3	0.12511408	0.255	-0.094	61.2	31.8	330.6	93.0
24 MN4	0.15951066	0.083	0.035	95.1	85.5	350.5	180.6
25 M4	0.16102280	0.155	-0.026	43.4	267.2	223.8	310.6
26 SN4	0.16233258	0.155	-0.021	86.6	348.8	262.2	75.4
27 MS4	0.16384473	0.079	-0.013	78.1	55.2	337.1	133.3
28 S4	0.16666667	0.074	-0.004	151.7	94.1	302.4	245.8
29 2MK5	0.20280355	0.059	0.007	89.2	18.2	289.0	107.5
30 2SK5	0.20844741	0.062	0.019	126.8	5.8	239.0	132.6
31 2MN6	0.24002205	0.074	0.007	150.8	50.5	259.7	201.4
32 M6	0.24153420	0.076	-0.019	154.2	178.4	24.2	332.6
33 2MS6	0.24435613	0.060	-0.013	38.1	54.6	16.5	92.7
34 2SM6	0.24717806	0.040	0.015	83.1	338.2	255.1	61.3
35 3MK7	0.28331494	0.040	0.018	155.3	71.1	275.8	226.4
36 M8	0.32204559	0.073	-0.020	62.5	218.6	156.1	281.1

USCG BEAUFORT SEA STUDY

ANALYSIS RESULTS IN CURRENT ELLIPSE FORM

AMPLITUDES HAVE BEEN SCALED ACCORDING TO APPLIED FILTERS

STN: CG-21

LAT: 70 56 0.0 N

DEPTH: 40 M

LONG: 146 1 0.0 W

START: 1300Z 10/ 4/81

END: 2200Z 1/ 8/81

NAME	FREQUENCY (CY/HR)	MAJOR (CM/S)	MINOR (CM/S)	INC	G	G+	G-
----	-----	-----	-----	---	---	---	---
1 Z0	0.00000000	7.042	0.000	151.2	180.0	28.8	331.2
2 MM	0.00151215	2.440	-0.719	173.9	46.5	232.6	220.4
3 MSF	0.00282193	6.453	-0.110	149.6	46.3	256.8	195.9
4 ALP1	0.03439657	0.583	-0.120	136.7	20.3	243.6	156.9
5 ZQ1	0.03570635	0.324	0.122	1.6	86.2	84.6	87.7
6 Q1	0.03721850	0.400	0.310	128.9	356.1	227.2	125.0
7 O1	0.03873065	0.144	-0.050	69.6	181.5	111.9	251.2
8 NO1	0.04026859	0.370	0.081	53.1	305.3	252.2	358.3
9 K1	0.04178075	0.301	0.070	65.5	171.2	105.7	236.7
10 J1	0.04329290	0.360	-0.103	155.2	294.2	139.0	89.4
11 OO1	0.04483084	0.282	0.096	107.0	115.6	8.6	222.7
12 UPS1	0.04634299	0.325	0.104	140.3	115.2	334.9	255.4
13 EPS2	0.07617732	0.208	-0.082	47.7	313.4	265.7	1.1
14 MU2	0.07768947	0.362	-0.132	127.1	330.3	203.1	97.4
15 N2	0.07899925	0.092	-0.061	61.0	235.7	174.7	296.7
16 M2	0.08051140	0.938	-0.813	68.3	13.5	305.2	81.8
17 L2	0.08202355	0.149	-0.081	138.3	279.1	140.8	57.4
18 S2	0.08333333	0.379	-0.234	43.0	80.8	37.8	123.8
19 ETA2	0.08507364	0.130	-0.085	177.4	80.2	262.8	257.6
20 MO3	0.11924206	0.168	-0.109	127.6	68.7	301.1	196.3
21 M3	0.12076710	0.162	-0.021	28.0	283.2	255.2	311.2
22 MK3	0.12229215	0.098	0.025	29.2	23.0	353.8	52.1
23 SK3	0.12511408	0.063	-0.049	78.5	142.2	63.6	220.7
24 MN4	0.15951066	0.032	0.023	128.4	65.6	297.3	194.0
25 M4	0.16102280	0.104	0.051	165.1	262.0	96.9	67.0
26 SN4	0.16233258	0.026	-0.004	91.4	254.2	162.8	345.6
27 MS4	0.16384473	0.100	-0.052	101.3	137.5	36.2	238.8
28 S4	0.16666667	0.111	-0.013	48.2	74.0	25.8	122.3
29 ZMK5	0.20280355	0.054	0.034	22.5	61.7	39.2	84.2
30 ZSK5	0.20844741	0.063	-0.030	23.7	83.2	59.4	106.9
31 ZMN6	0.24002205	0.103	-0.035	123.1	270.6	147.5	33.7
32 M6	0.24153420	0.063	-0.034	152.9	39.8	246.9	192.6
33 ZMS6	0.24435613	0.041	0.002	116.8	185.3	68.5	302.2
34 ZSM6	0.24717806	0.040	0.020	123.7	202.3	78.6	326.0
35 ZMK7	0.28331494	0.051	-0.003	164.1	359.8	195.7	163.9
36 M8	0.32204559	0.056	0.000	0.7	119.0	118.4	119.7

USCG BEAUFORT SEA STUDY

ANALYSIS RESULTS IN CURRENT ELLIPSE FORM

AMPLITUDES HAVE BEEN SCALED ACCORDING TO APPLIED FILTERS

STN: CG-22

DEPTH: 268 M

START: 1300Z 10/ 4/81

LAT: 70 56 0.0 N

LONG: 146 1 0.0 W

END: 200Z 3/ 6/81

	NAME	FREQUENCY (CY/HR)	MAJOR (CM/S)	MINOR (CM/S)	INC	G	G+	G-
	----	-----	-----	-----	---	---	---	---
1	Z0	0.00000000	2.565	0.000	158.3	180.0	21.7	338.3
2	MM	0.00151215	3.920	0.408	171.6	47.4	235.8	219.0
3	MSF	0.00282193	4.766	0.184	178.6	339.0	160.4	157.6
4	ALP1	0.03439657	0.293	-0.077	79.2	24.8	305.6	104.0
5	2Q1	0.03570635	0.366	0.116	105.9	283.7	177.8	29.7
6	Q1	0.03721850	0.317	-0.052	168.5	194.9	26.4	3.3
7	O1	0.03873065	0.238	-0.128	56.0	250.4	194.4	306.4
8	NO1	0.04026859	0.261	0.189	4.4	302.3	297.9	306.8
9	K1	0.04178075	0.224	0.044	30.0	214.7	184.8	244.7
10	J1	0.04329290	0.485	-0.141	152.0	293.7	141.7	85.6
11	OO1	0.04483084	0.359	-0.126	171.7	177.9	6.2	349.6
12	UPS1	0.04634299	0.338	-0.211	171.2	106.8	295.6	278.0
13	EPS2	0.07617732	0.197	-0.023	46.8	60.4	13.6	107.2
14	MU2	0.07768947	0.144	-0.035	148.4	32.0	243.6	180.4
15	N2	0.07899925	0.236	-0.041	177.0	312.4	135.3	129.4
16	M2	0.08051140	0.142	0.051	49.0	215.2	166.2	264.3
17	L2	0.08202355	0.150	0.057	119.5	348.3	228.8	107.8
18	S2	0.08333333	0.094	-0.012	171.9	54.2	242.2	226.1
19	ETA2	0.08507364	0.050	-0.019	85.9	226.3	140.4	312.2
20	MO3	0.11924206	0.066	-0.032	39.7	276.1	236.4	315.9
21	M3	0.12076710	0.118	-0.026	33.2	295.7	262.5	328.8
22	MK3	0.12229215	0.160	0.026	67.0	189.4	122.4	256.4
23	SK3	0.12511408	0.083	0.019	121.6	270.0	258.4	141.6
24	MN4	0.15951066	0.054	-0.003	143.2	88.1	304.9	231.2
25	M4	0.16102280	0.072	-0.021	40.3	143.9	103.6	184.3
26	SN4	0.16233258	0.165	-0.026	15.5	353.7	338.3	9.2
27	MS4	0.16384473	0.111	-0.053	74.4	221.3	146.9	295.8
28	S4	0.16666667	0.095	0.011	94.2	7.8	273.6	102.1
29	2MK5	0.20280355	0.034	-0.009	87.0	356.2	269.2	83.2
30	2SK5	0.20844741	0.036	-0.003	63.2	207.4	144.2	270.6
31	2MN6	0.24002205	0.078	-0.051	44.2	326.8	282.6	11.0
32	M6	0.24153420	0.029	-0.003	27.0	157.4	130.4	184.4
33	2MS6	0.24435613	0.063	-0.026	21.0	344.1	323.0	5.1
34	2SM6	0.24717806	0.026	-0.005	117.9	64.2	306.3	182.0
35	3MK7	0.28331494	0.052	-0.017	33.5	140.4	106.9	173.8
36	M8	0.32204559	0.039	-0.008	32.9	7.6	334.7	40.4

USCG BEAUFORT SEA STUDY

ANALYSIS RESULTS IN CURRENT ELLIPSE FORM

AMPLITUDES HAVE BEEN SCALED ACCORDING TO APPLIED FILTERS

STN: CG-32

LAT: 70 57 0.0 N

DEPTH: 268 M

LONG: 146 2 0.0 W

START: 1100Z 11/ 4/81

END: 100Z 2/ 8/81

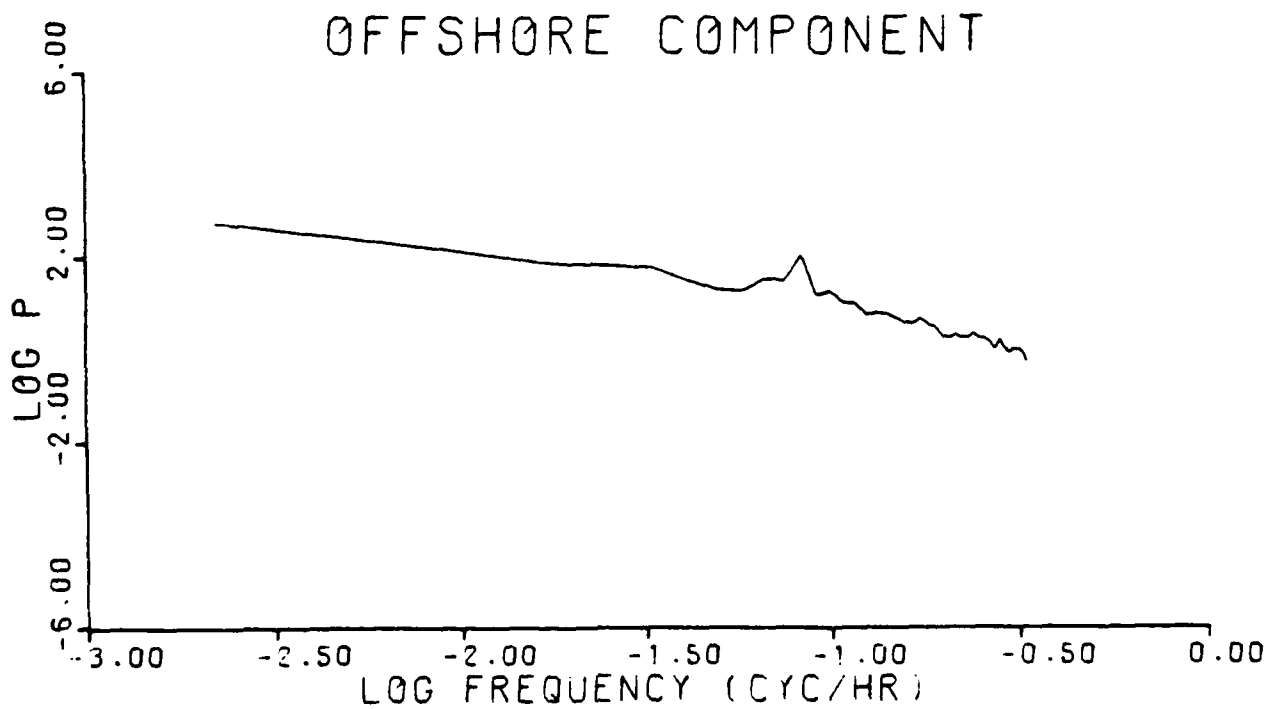
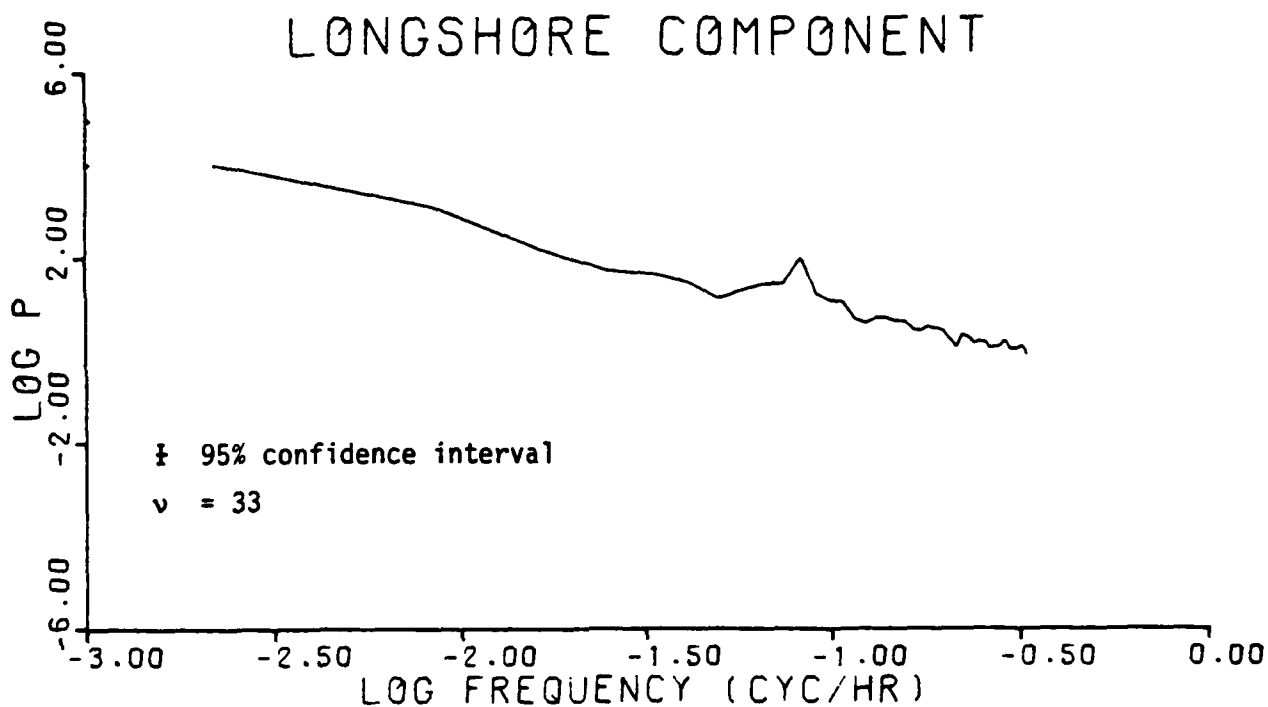
NAME	FREQUENCY (CY/HR)	MAJOR (CM/S)	MINOR (CM/S)	INC	G	G+	G-
----	-----	-----	-----	---	---	---	---
1 Z0	0.00000000	2.692	0.000	158.2	180.0	21.8	338.2
2 MM	0.00151215	0.497	0.190	175.2	130.2	315.0	305.4
3 MSF	0.00282193	2.218	0.405	179.2	6.6	187.4	185.9
4 ALP1	0.03439657	0.097	-0.037	153.7	282.9	129.2	76.5
5 2Q1	0.03570635	0.127	0.031	112.2	244.3	132.1	356.6
6 Q1	0.03721850	0.190	0.011	167.2	113.7	306.5	281.0
7 Q1	0.03873065	0.234	-0.098	75.1	253.4	178.3	328.5
8 NO1	0.04026859	0.156	-0.028	79.3	285.7	206.4	5.0
9 K1	0.04178075	0.116	-0.028	46.4	129.7	83.3	176.1
10 J1	0.04329290	0.135	-0.105	20.9	140.5	119.6	161.4
11 O01	0.04483084	0.191	-0.030	102.7	223.6	120.9	326.4
12 UPS1	0.04634299	0.059	-0.013	176.2	115.7	299.5	291.9
13 EPS2	0.07617732	0.156	-0.026	15.4	166.1	150.7	181.5
14 MU2	0.07768947	0.118	0.009	56.3	194.1	137.8	250.4
15 N2	0.07899925	0.084	-0.042	3.2	350.2	347.1	353.4
16 M2	0.08051140	0.108	0.007	81.3	311.2	229.9	32.6
17 L2	0.08202355	0.056	0.031	41.9	27.1	345.2	69.1
18 S2	0.08333333	0.096	-0.025	120.8	282.7	162.0	43.5
19 ETA2	0.08507364	0.127	-0.096	94.6	164.7	70.1	259.3
20 M03	0.11924206	0.020	-0.010	141.2	18.5	237.3	159.7
21 M3	0.12076710	0.042	-0.031	122.3	130.0	7.7	252.3
22 MK3	0.12229215	0.076	-0.020	115.8	335.2	219.3	91.0
23 SK3	0.12511408	0.036	-0.010	125.5	155.6	30.0	281.1
24 MN4	0.15951066	0.051	-0.036	171.0	139.4	328.4	310.4
25 M4	0.16102280	0.053	0.000	179.3	162.9	343.7	342.2
26 SN4	0.16233258	0.068	-0.017	15.5	140.4	124.9	156.0
27 MS4	0.16384473	0.029	0.017	131.8	241.7	109.9	13.5
28 S4	0.16666667	0.056	0.025	137.4	116.7	339.3	254.1
29 2MK5	0.20280355	0.025	-0.003	11.3	38.3	26.9	49.6
30 2SK5	0.20844741	0.013	0.007	13.0	128.5	115.6	141.5
31 2MN6	0.24002205	0.029	0.007	165.6	256.7	91.1	62.3
32 M6	0.24153420	0.031	-0.014	162.8	269.8	107.0	72.6
33 2MS6	0.24435613	0.027	0.009	180.0	139.3	319.3	319.3
34 2SM6	0.24717806	0.028	0.004	160.7	134.5	333.8	295.3
35 3MK7	0.28331494	0.032	-0.024	89.3	67.8	338.5	157.1
36 M8	0.32204559	0.028	-0.009	116.5	286.9	170.4	43.5

DATA APPENDIX 9

Power Spectra of Longshore and Offshore Velocity Components

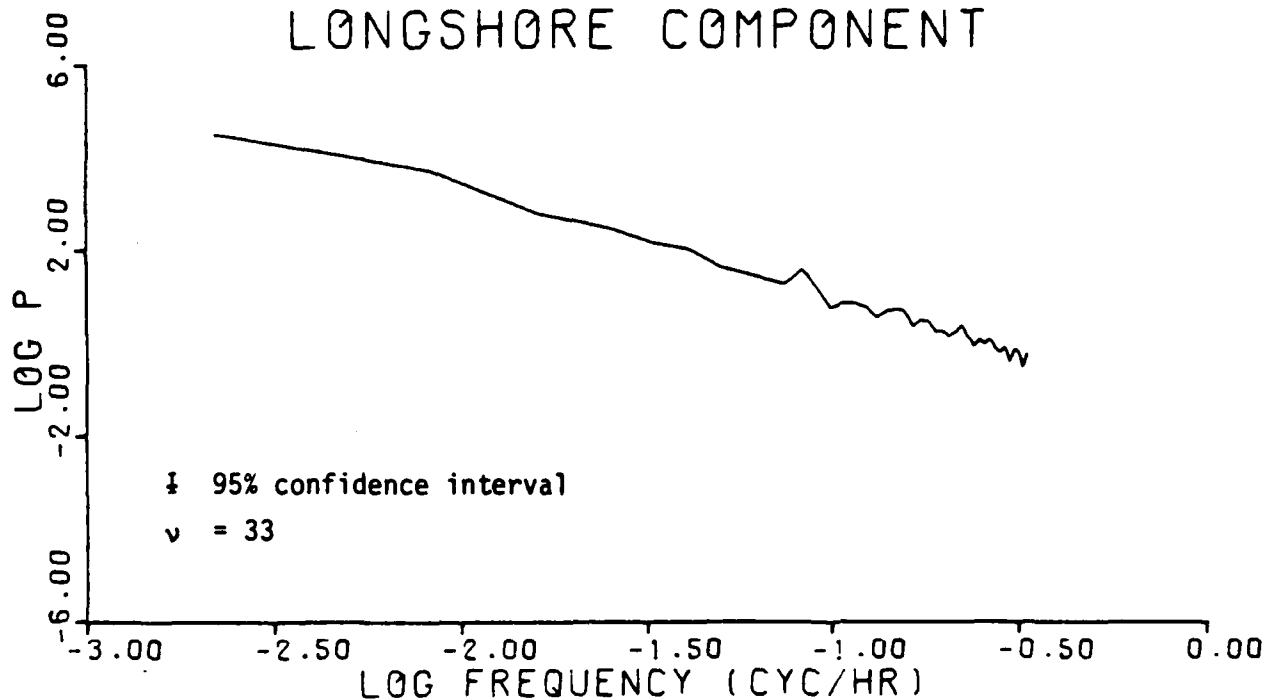
P in $\text{cm}^2 \text{s}^{-2} (\text{Cph})^{-1}$

POWER SPECTRA CG-1 TOP

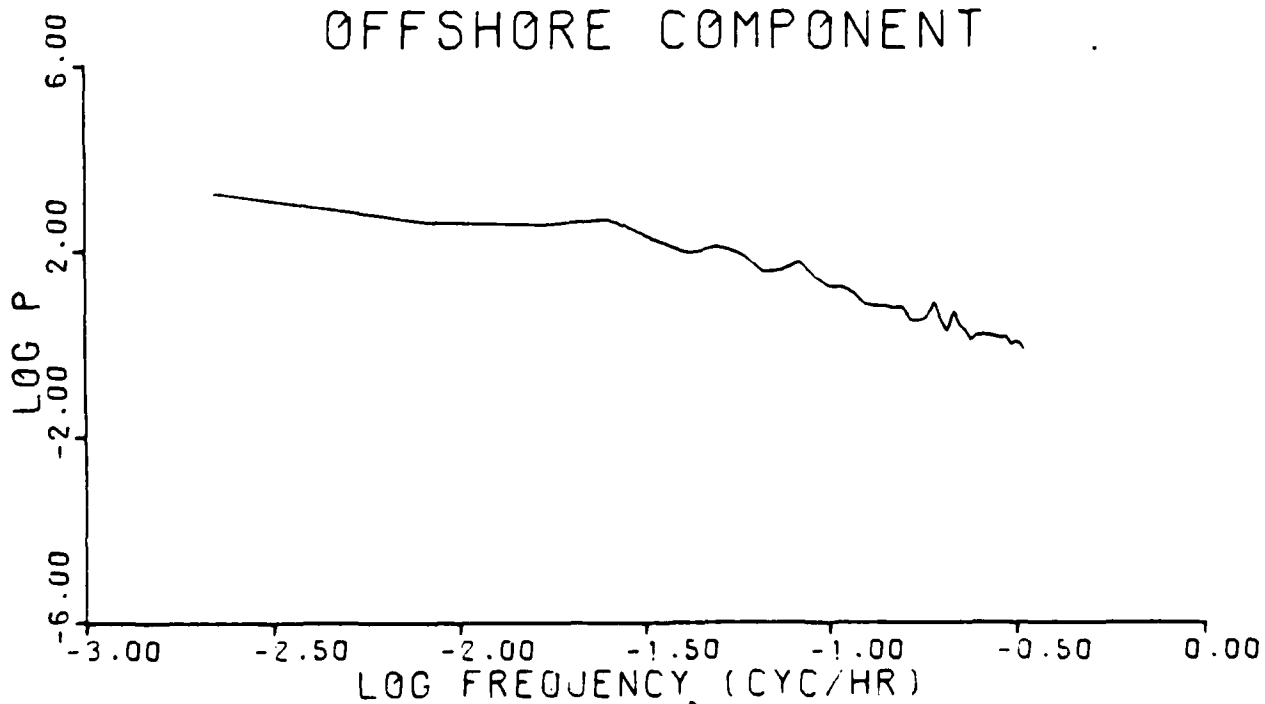


POWER SPECTRA CG-1 BOTTOM

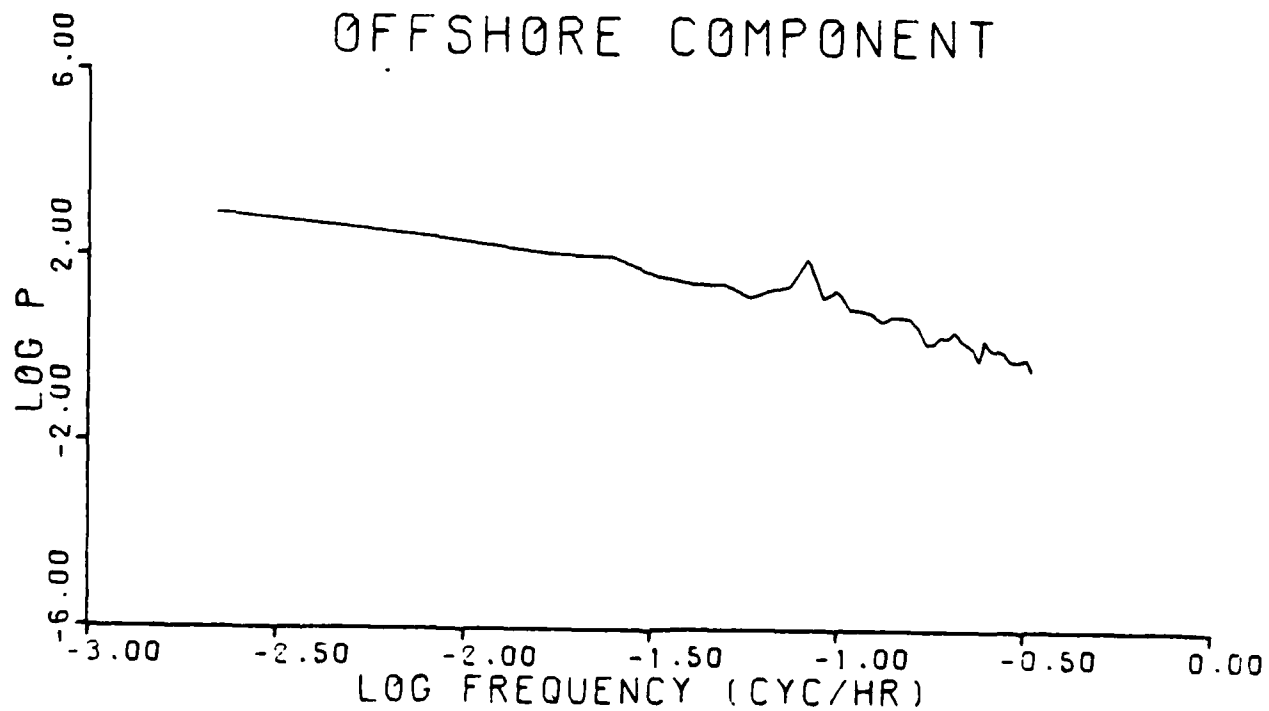
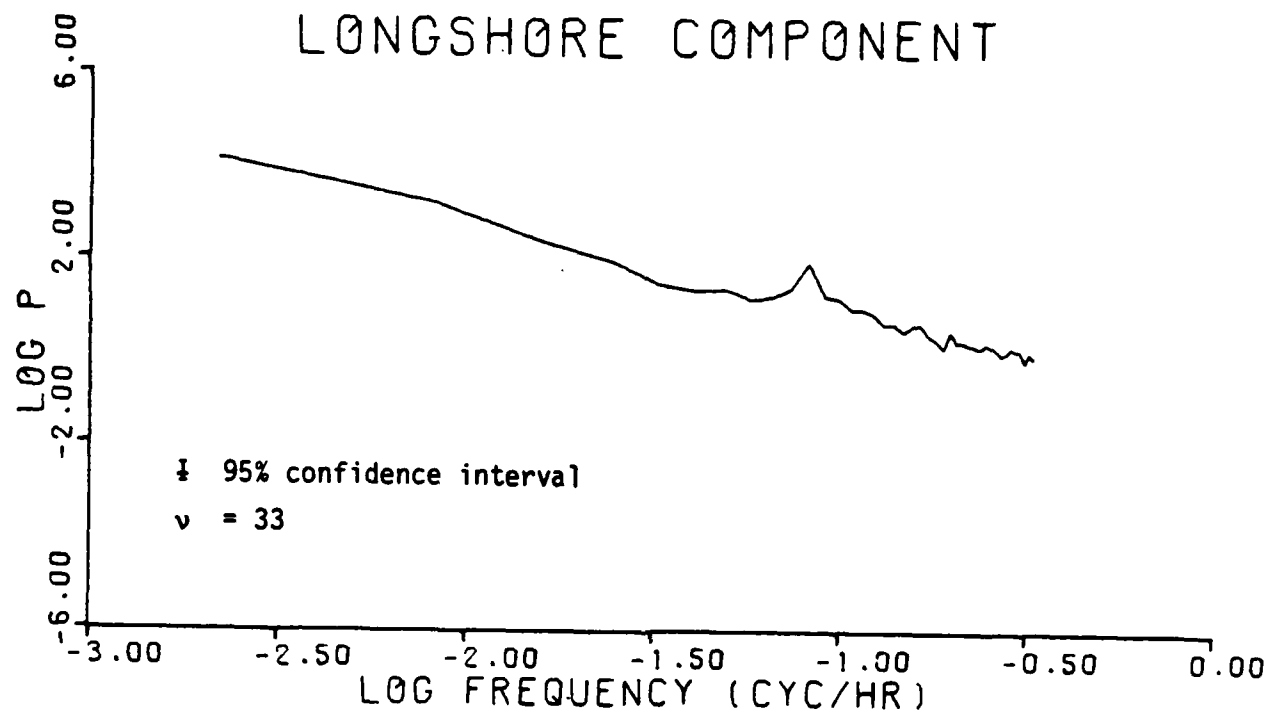
LONGSHORE COMPONENT



OFFSHORE COMPONENT

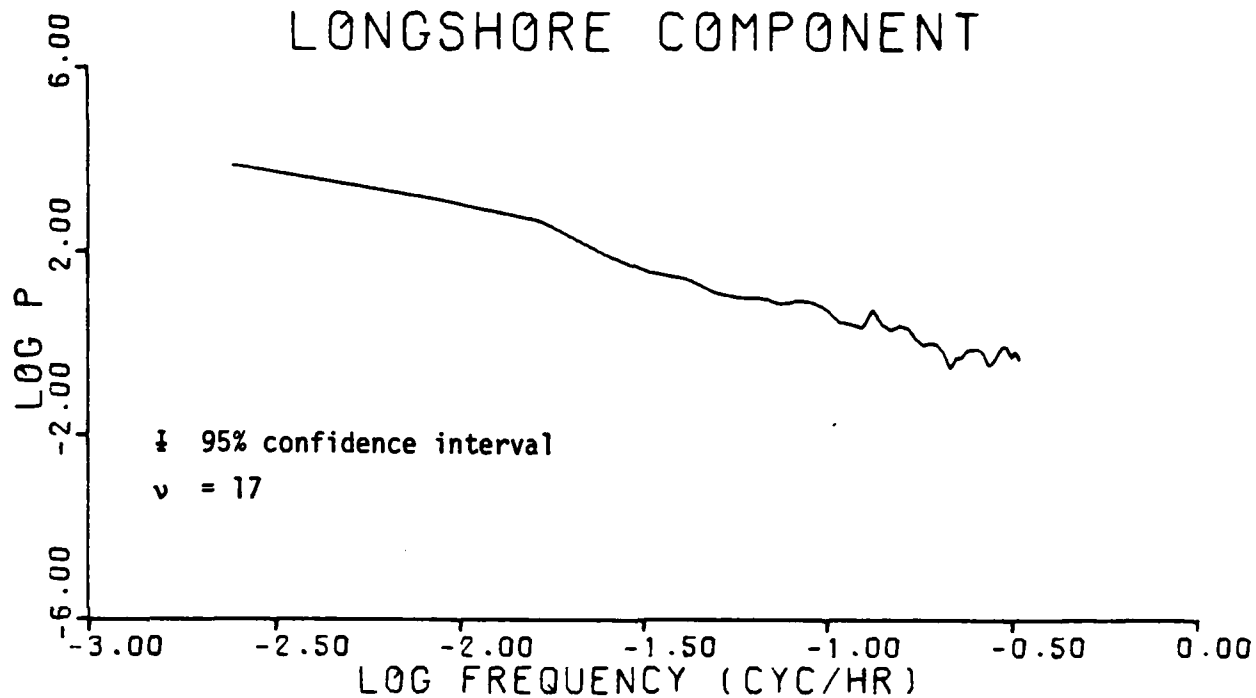


POWER SPECTRA CG-2 TOP

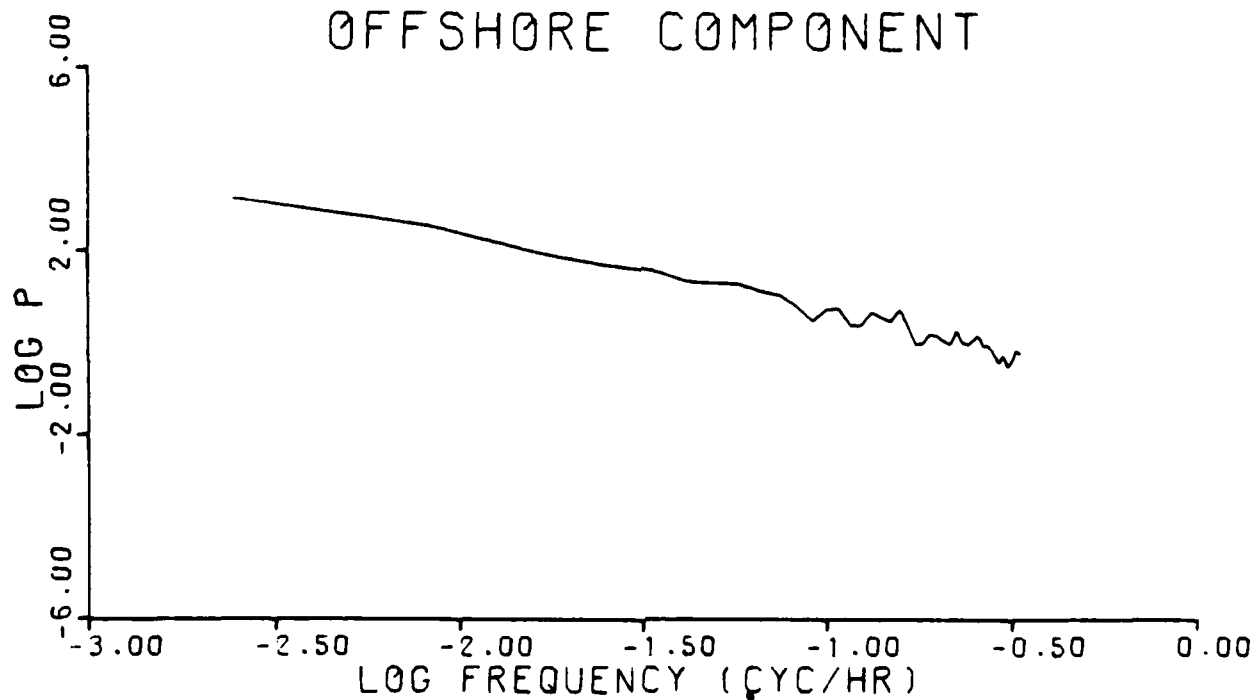


POWER SPECTRA CG-2 BOTTOM

LONGSHORE COMPONENT

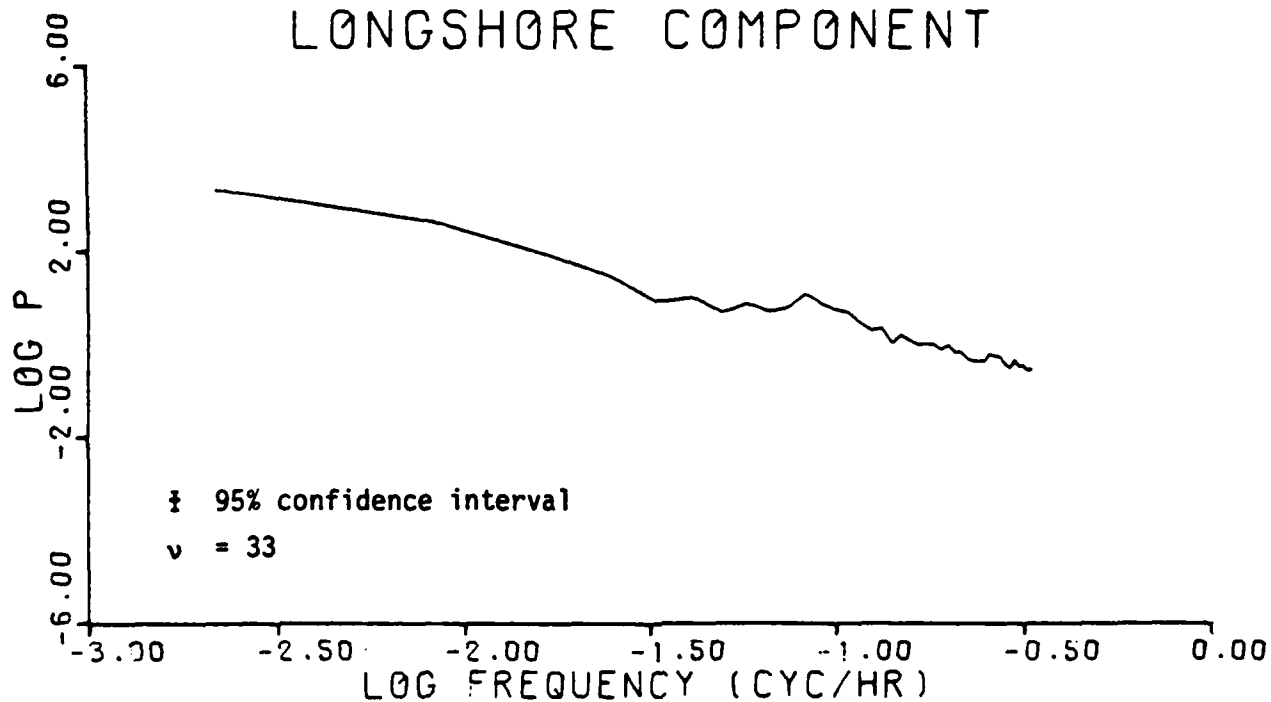


OFFSHORE COMPONENT

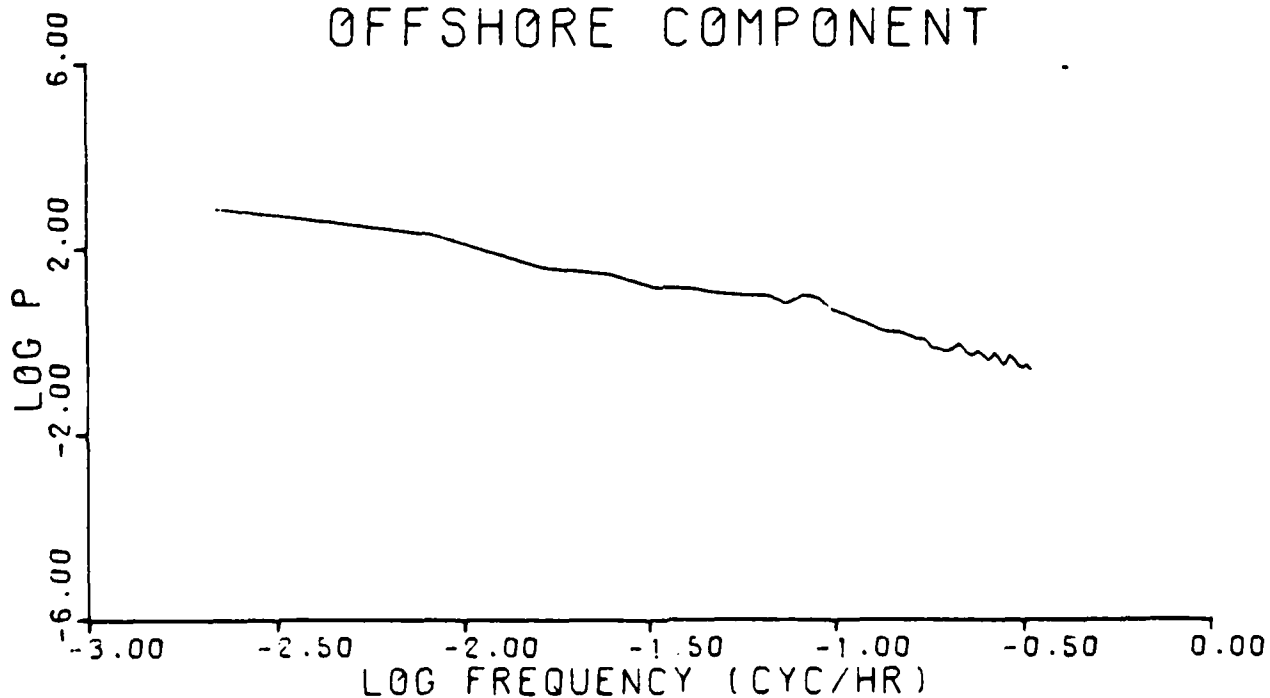


POWER SPECTRA CG-3 BOTTOM

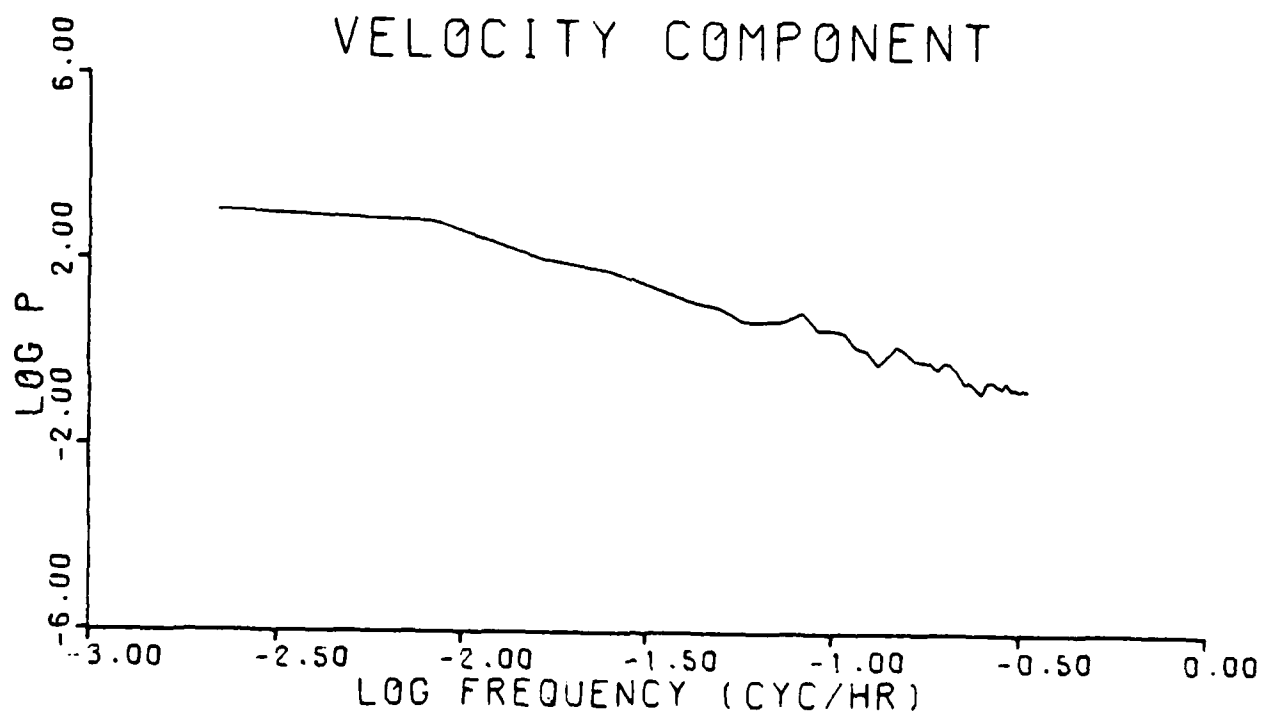
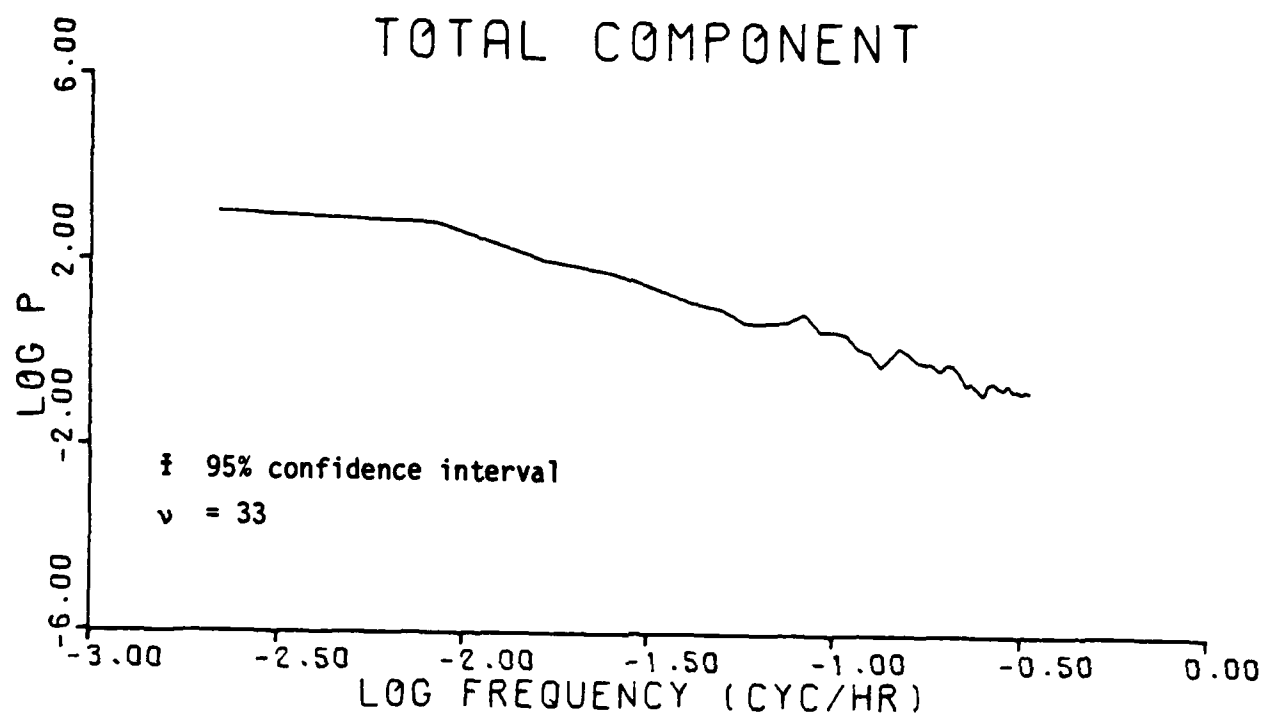
LONGSHORE COMPONENT



OFFSHORE COMPONENT



POWER SPECTRA CG-3 TOP



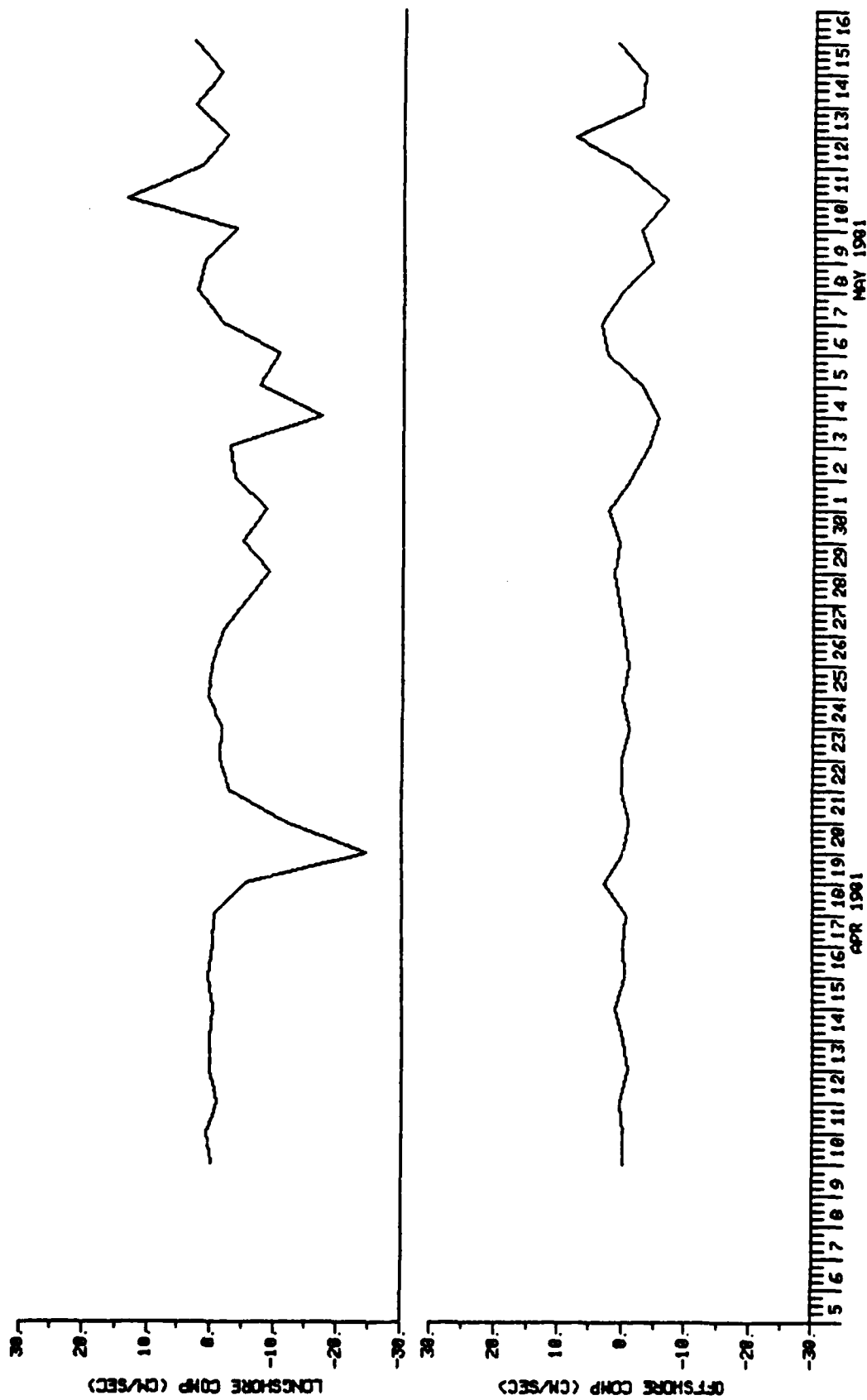
DATA APPENDIX 10

Time Series Plots Longshore and Offshore Components of Velocity
of Drifting Buoys 2577, 2578 and 2579

USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2577

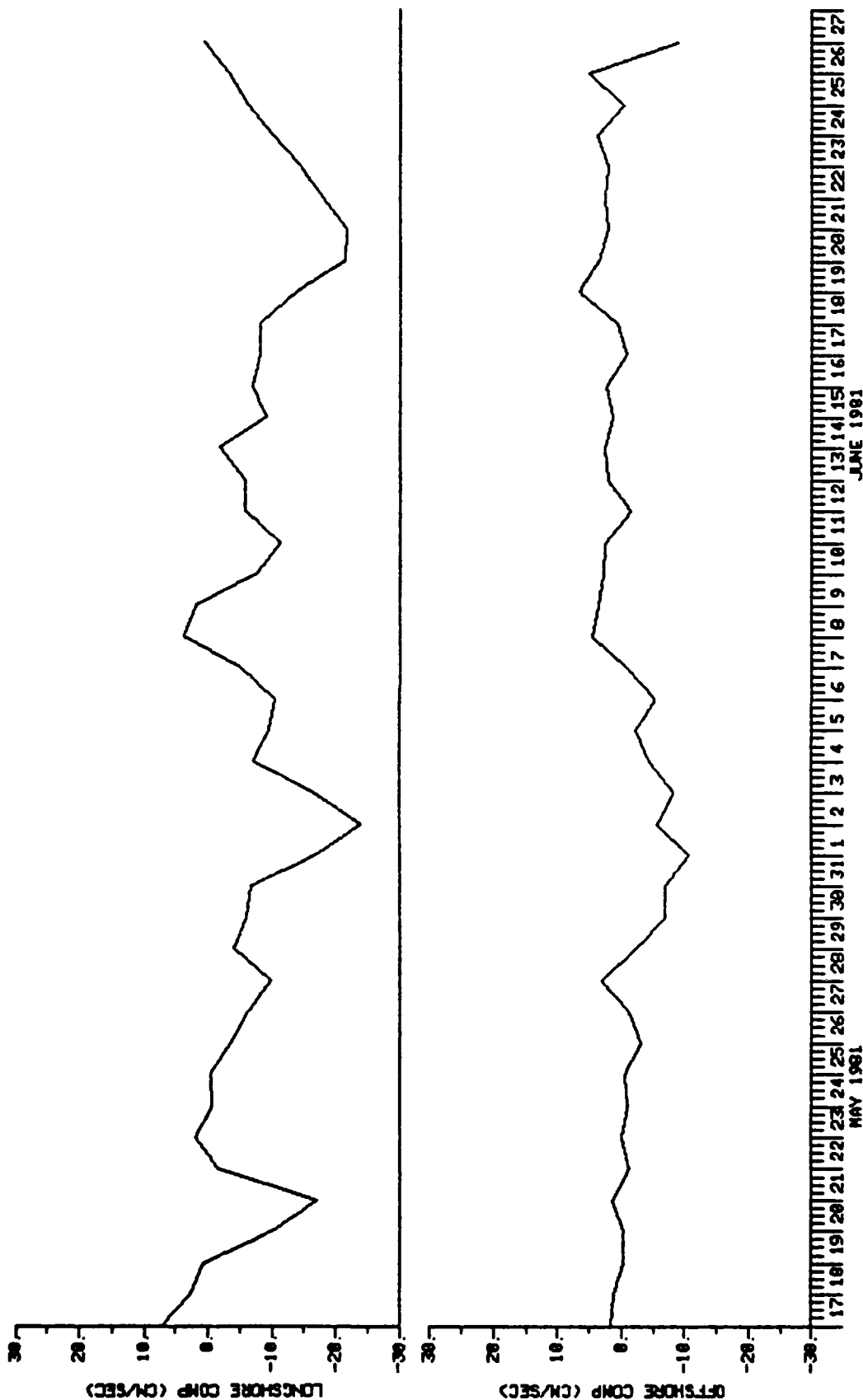
PAGE 1



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2577

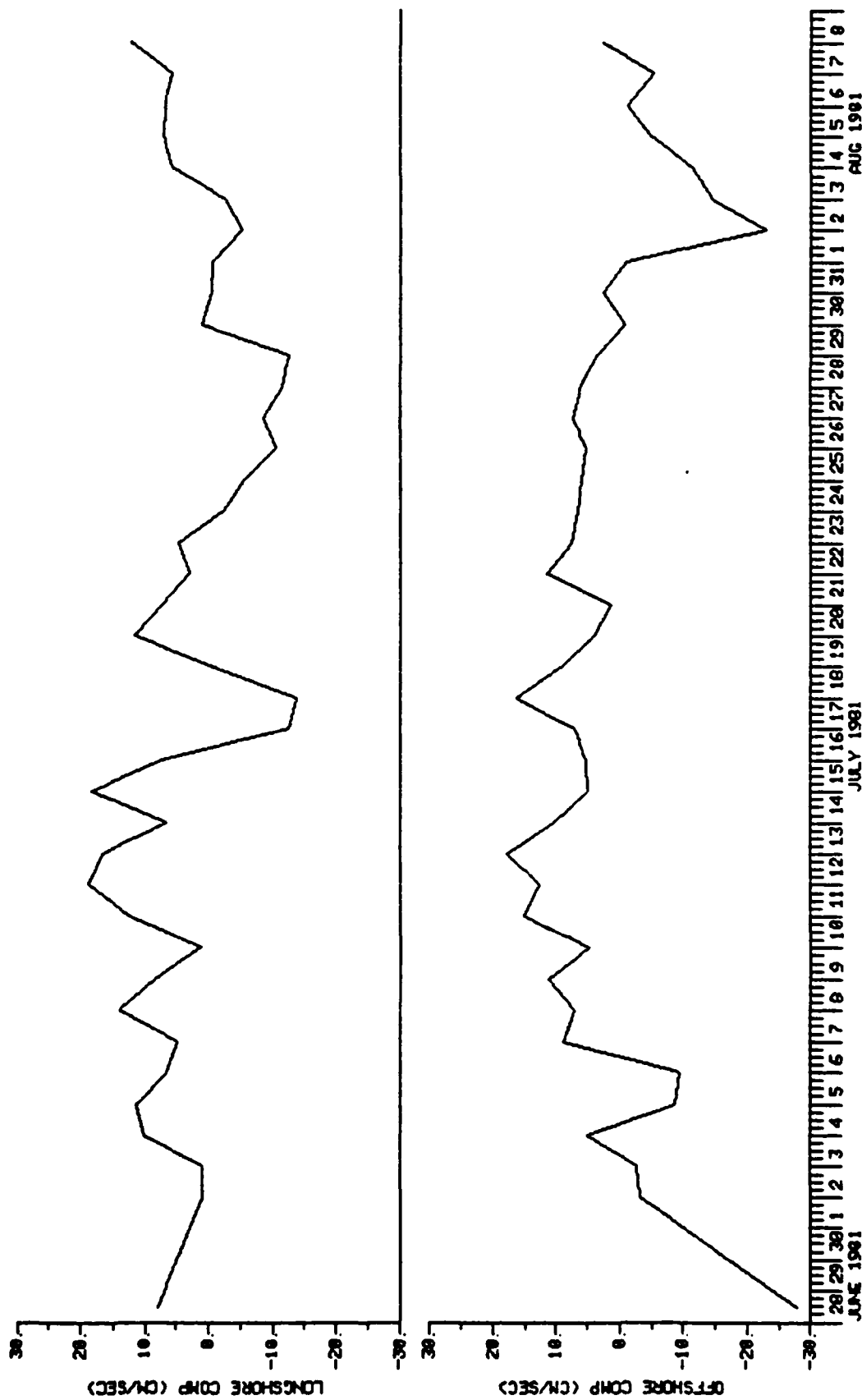
PAGE 2



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2577

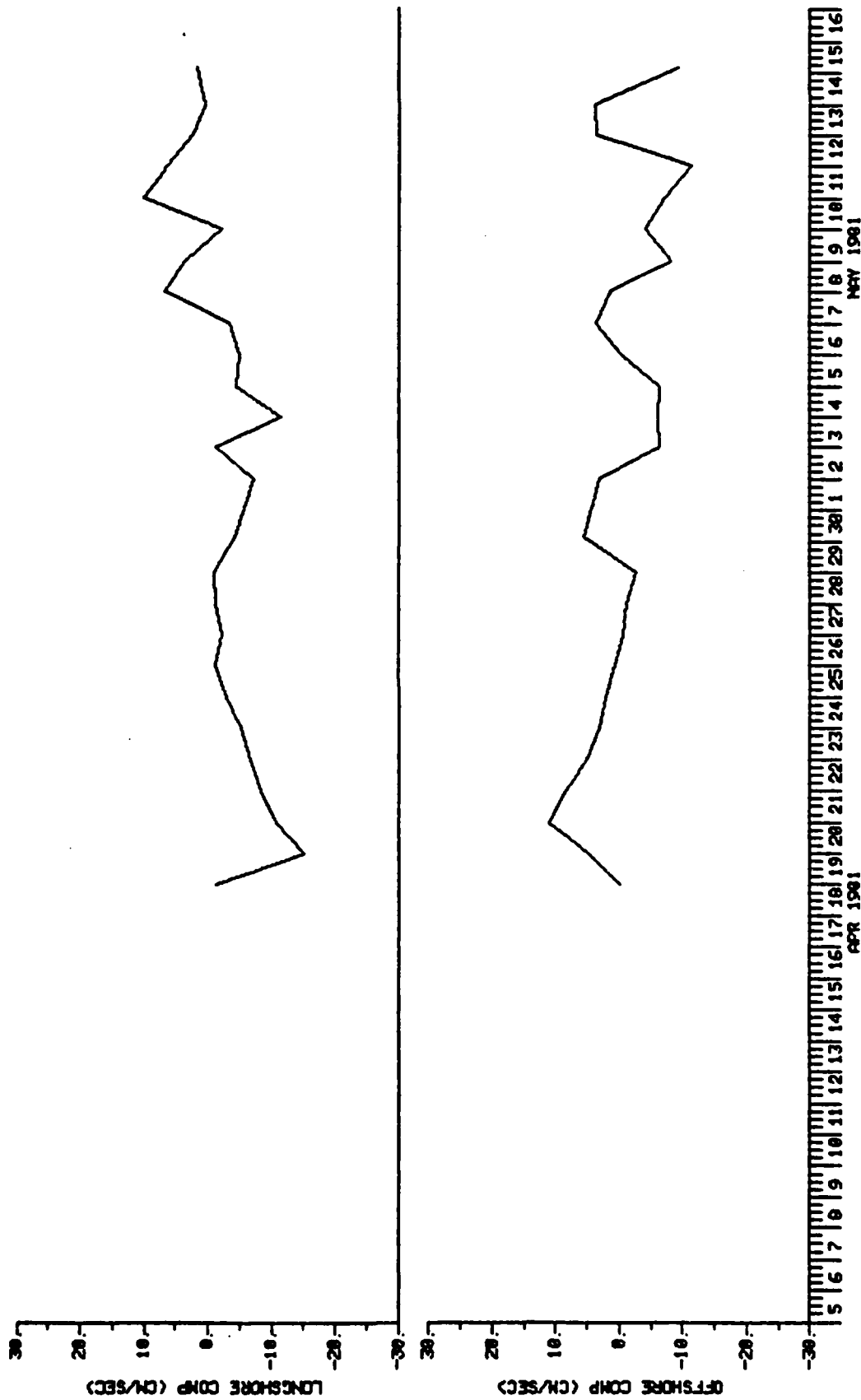
PAGE 3



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2578

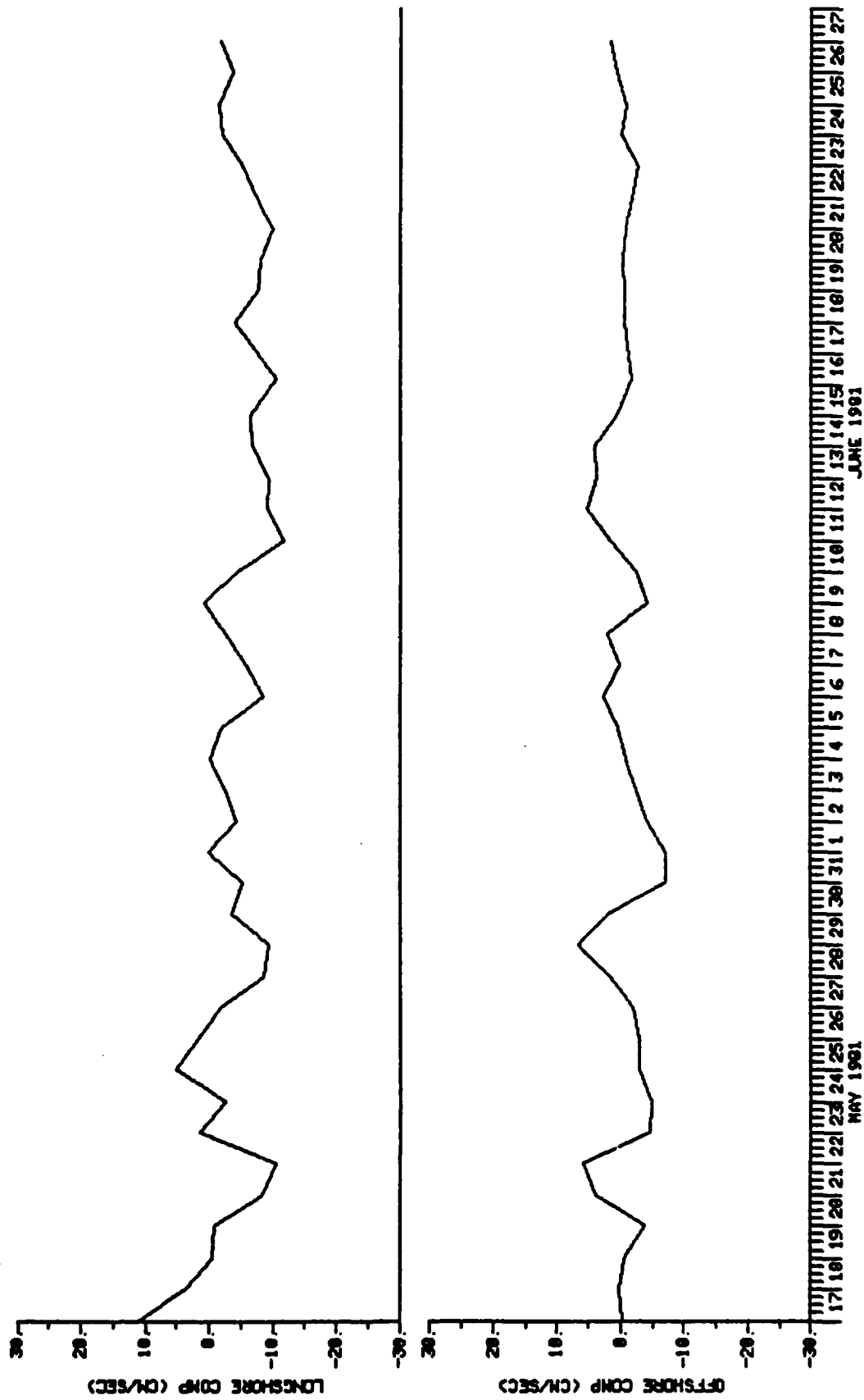
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

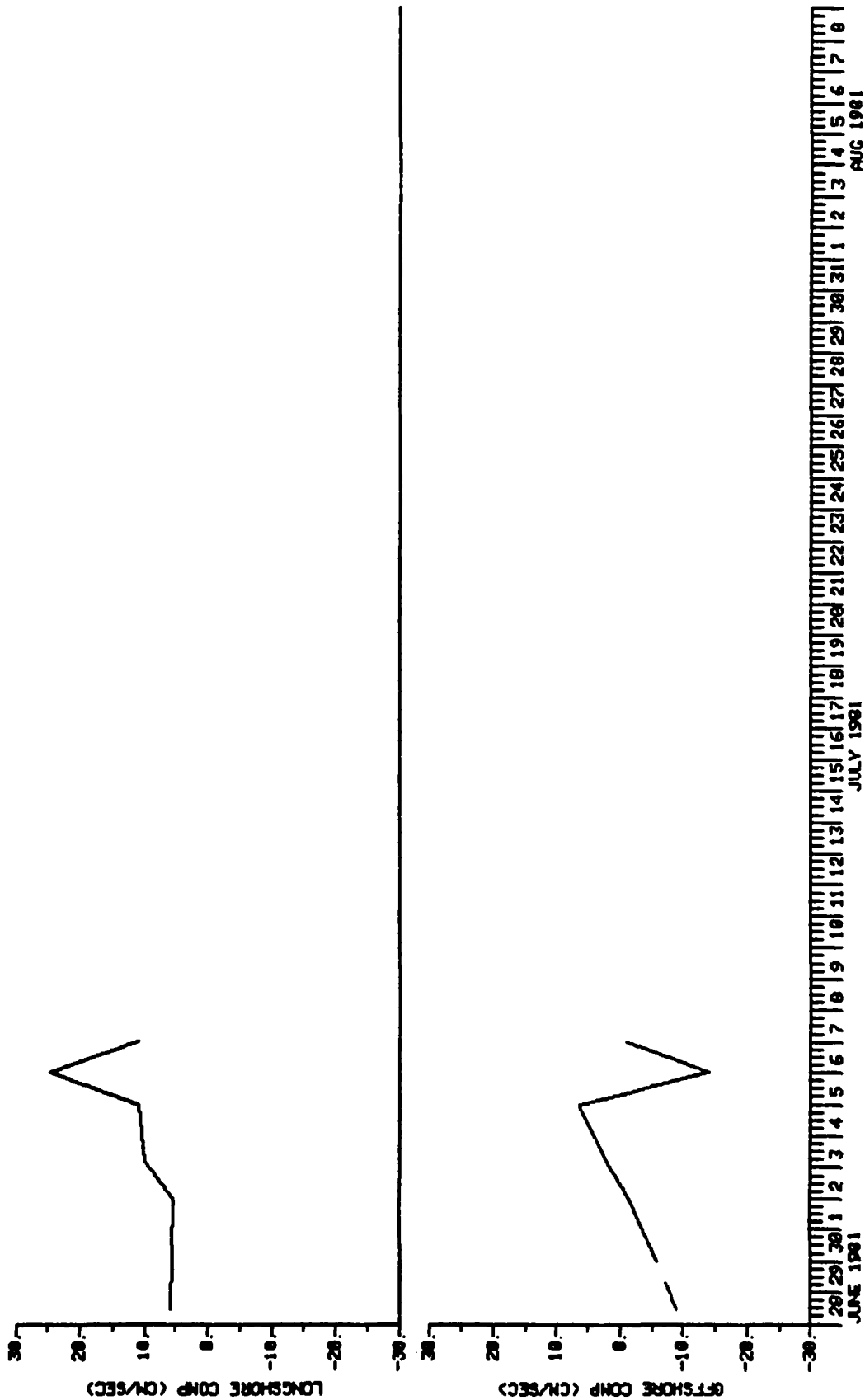
DRIFTING BUOY NO. 2578



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2578

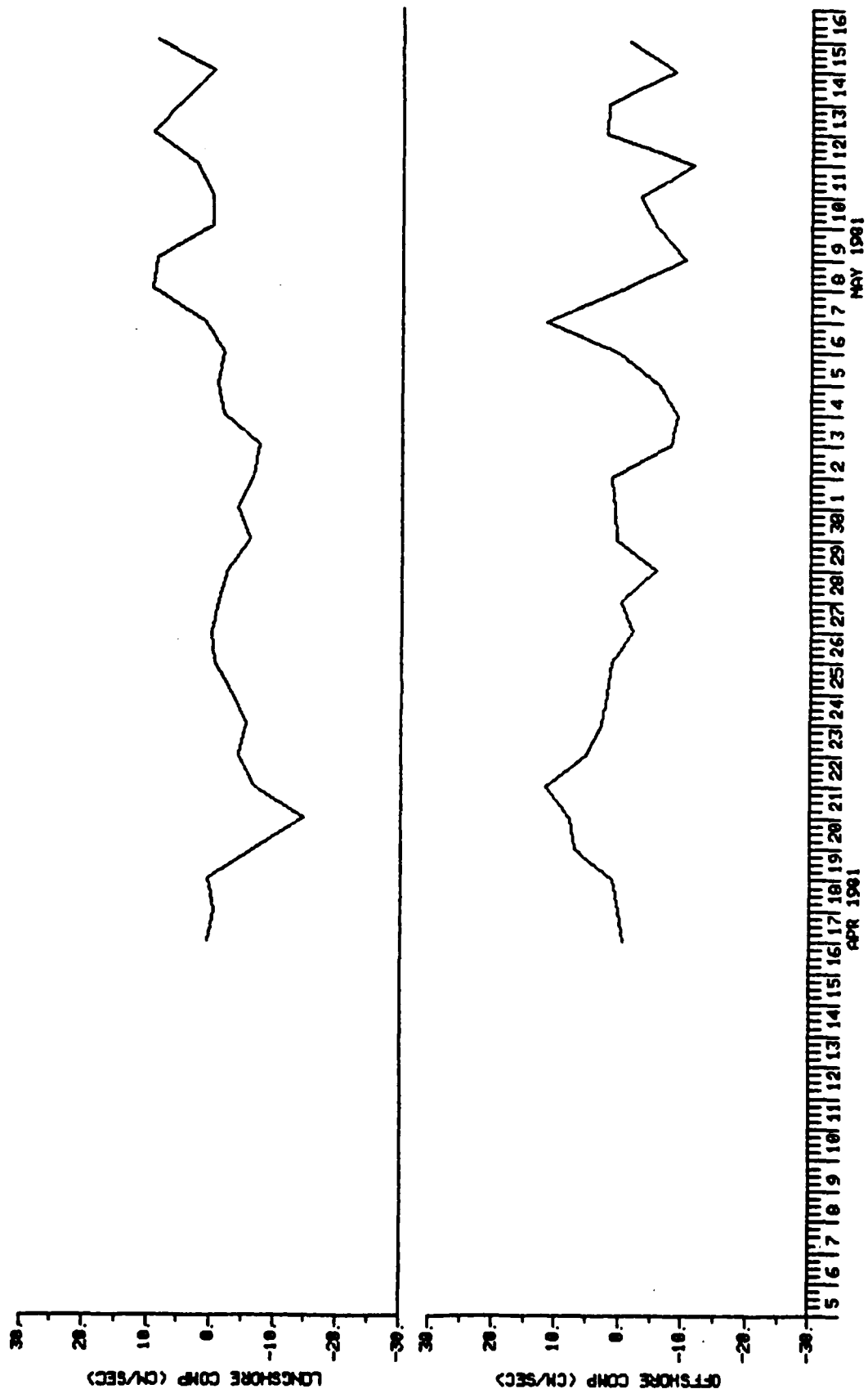
PAGE 3



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2579

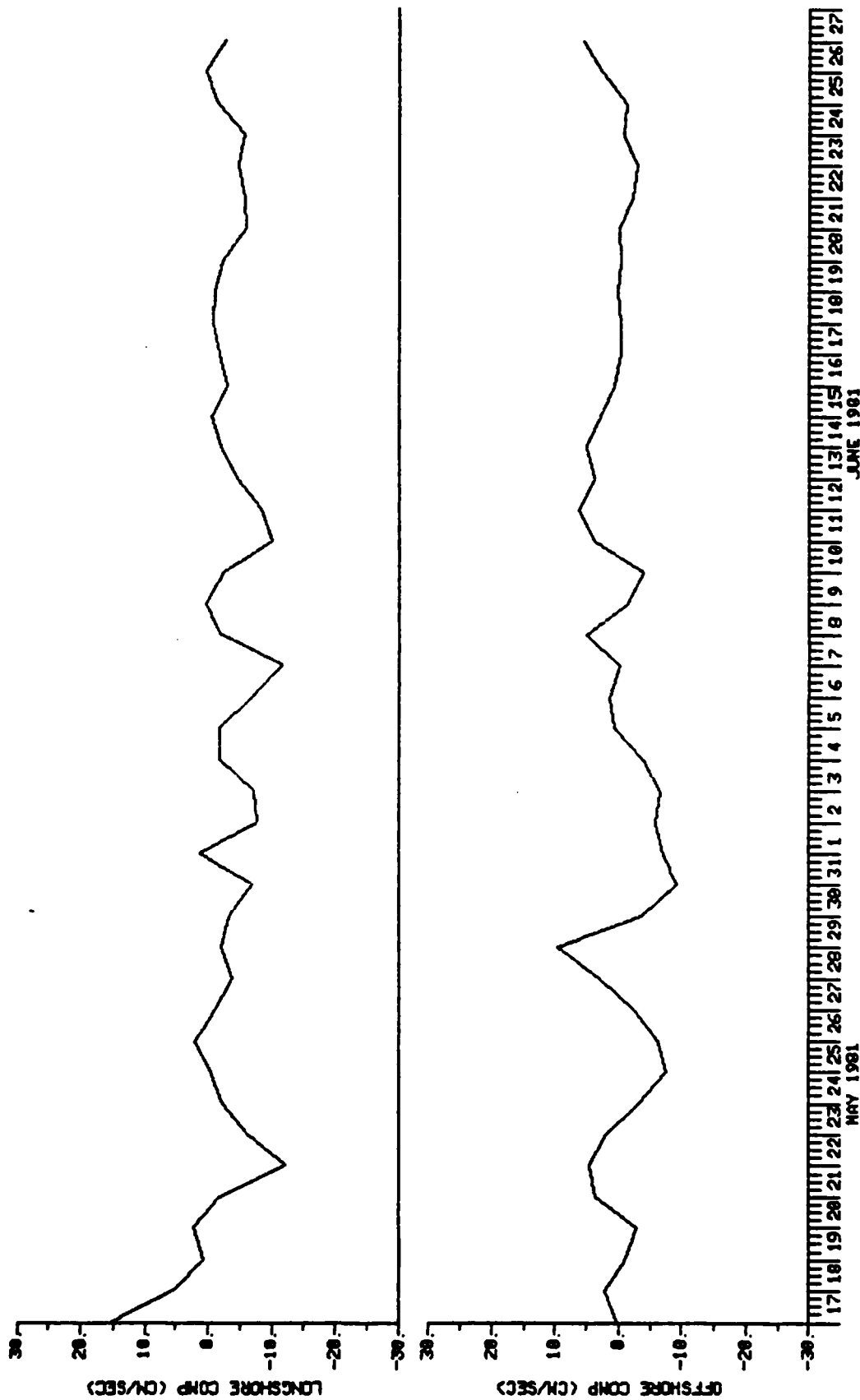
PAGE 1



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2579

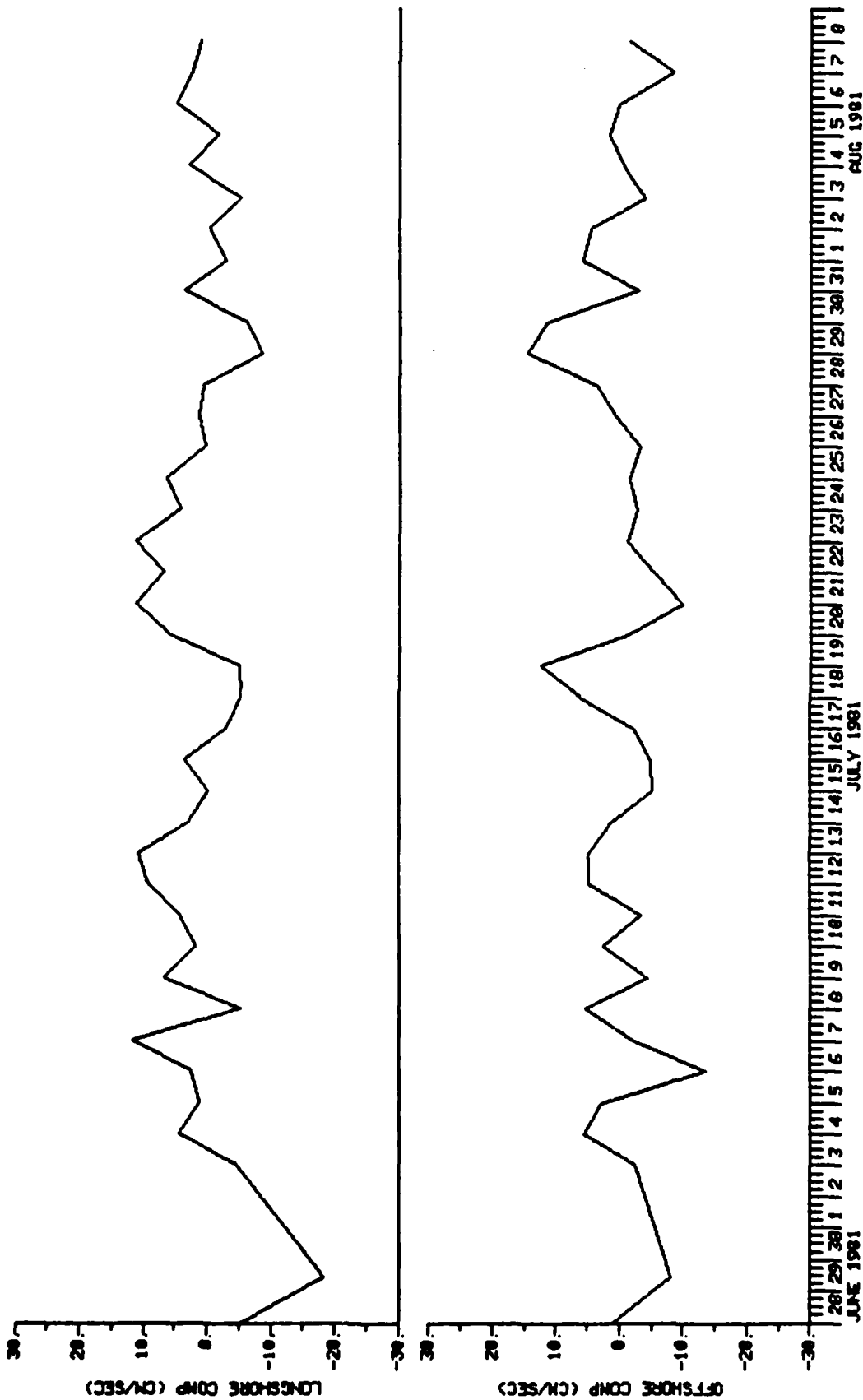
PAGE 2



USCG BEAUFORT SEA STUDY

DRIFTING BUOY NO. 2579

PAGE 3



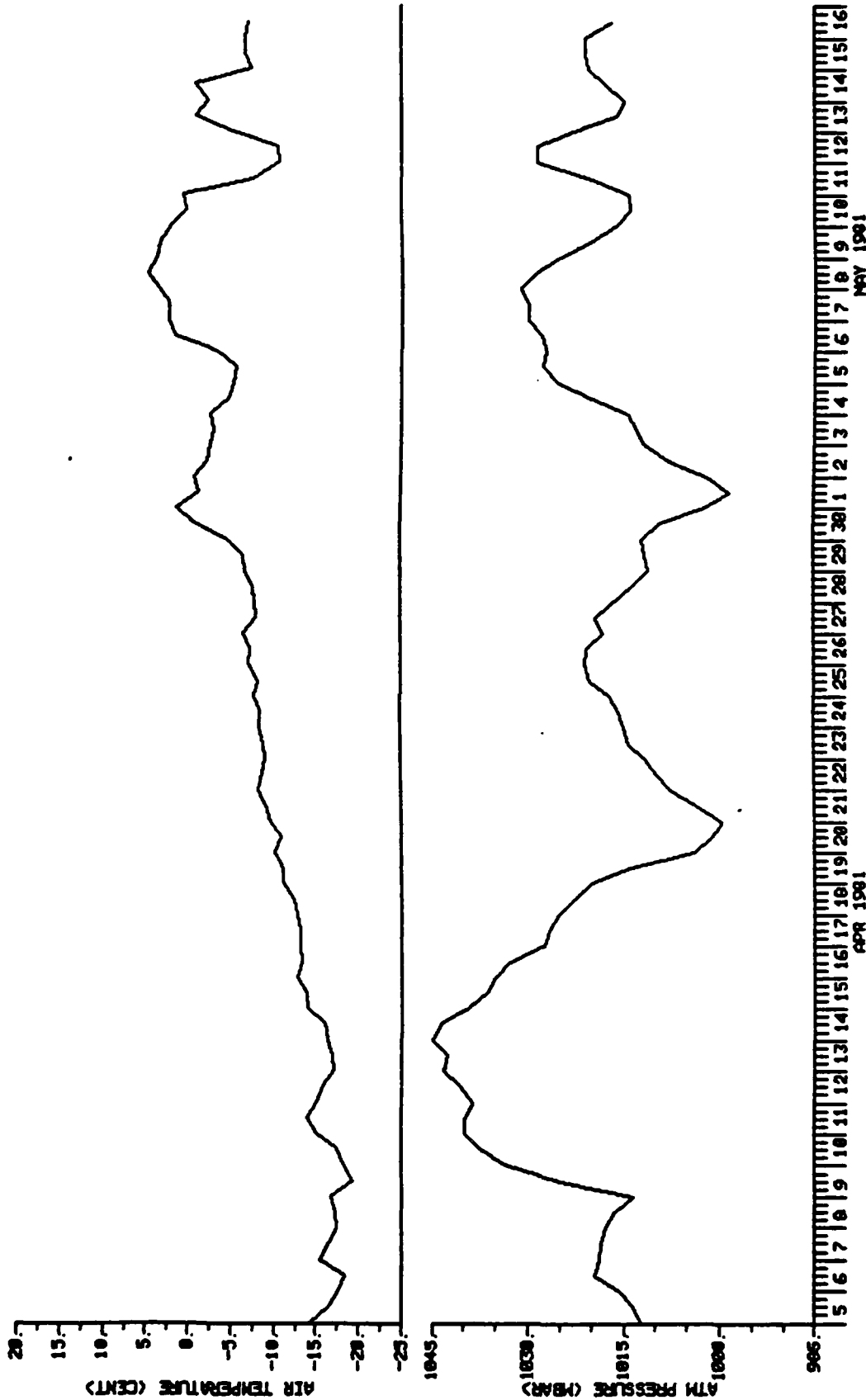
DATA APPENDIX 11

Time Series Plots of Surface Atmospheric Pressure and Air Temperature
at Three Points in the Southern Beaufort Sea:
71° N 146° W, 71.5° N 153° W and 70.5° N 139° W

USCG BEAUFORT SEA STUDY

LONGSHORE 118 DEGREE TRUE AT 71.0 N 146.0 W

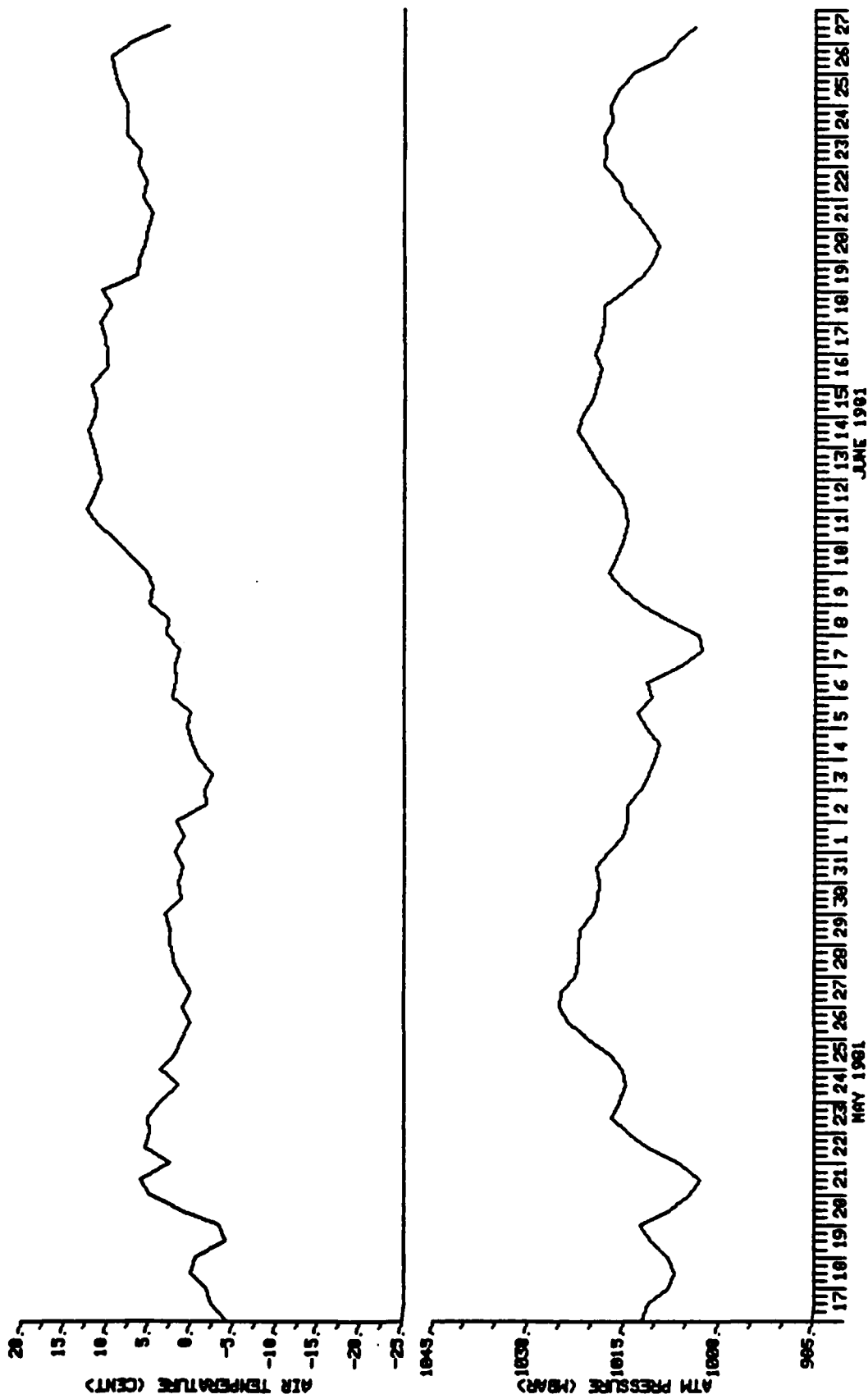
PAGE 1



USCG BEAUFORT SEA STUDY

LONGSHORE 110 DEGREES TRUE AT 71.0 N 146.0 W

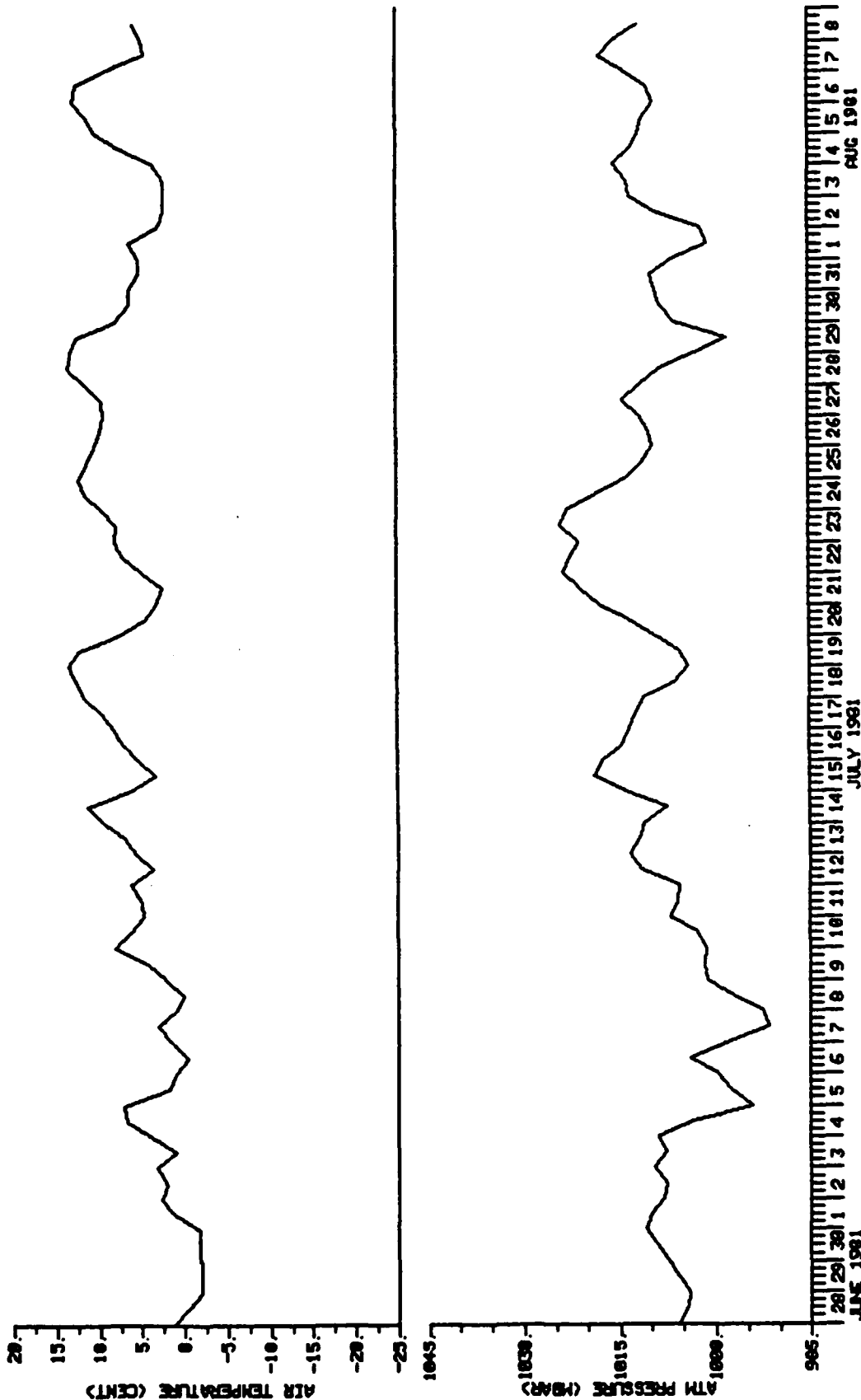
PAGE 2



USCG BEAUFORT SEA STUDY

LONGSHORE 110 DEGREES TRUE AT 71.0 N 146.0 W

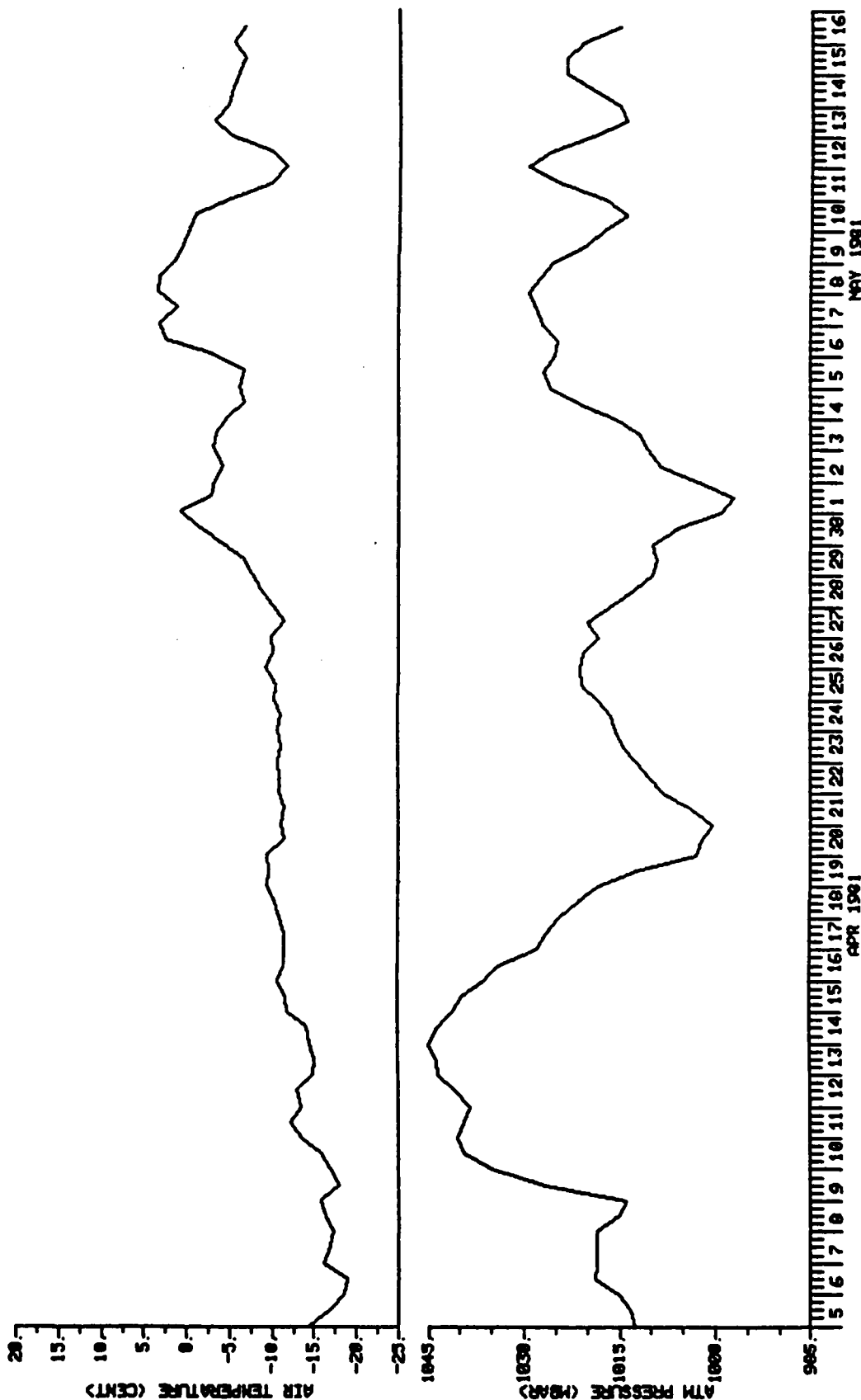
PAGE 3



USCG BEAUFORT SEA STUDY

LONGSHORE 120 DEGREE8 TRUE AT 71.5 N 153.0 W

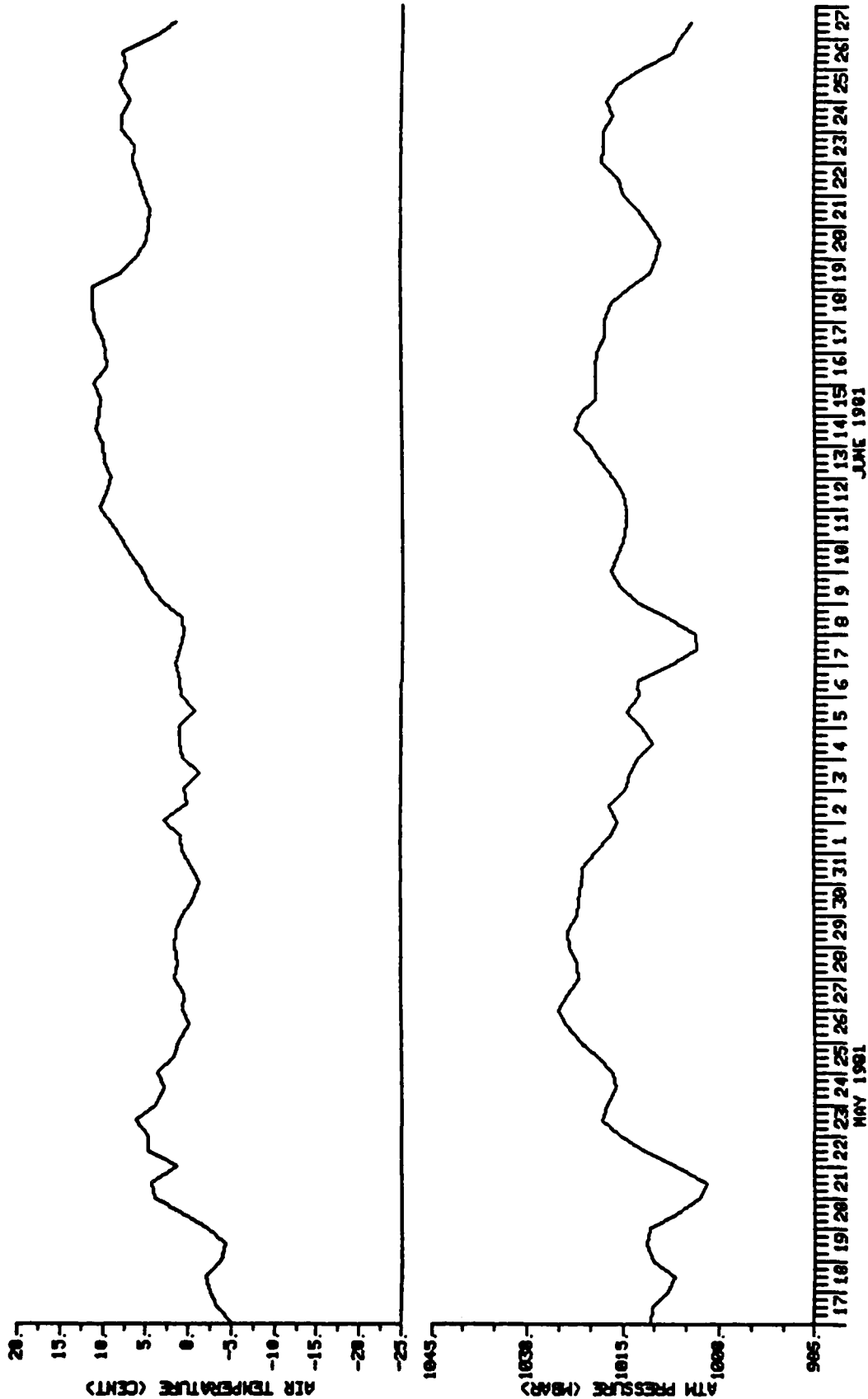
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

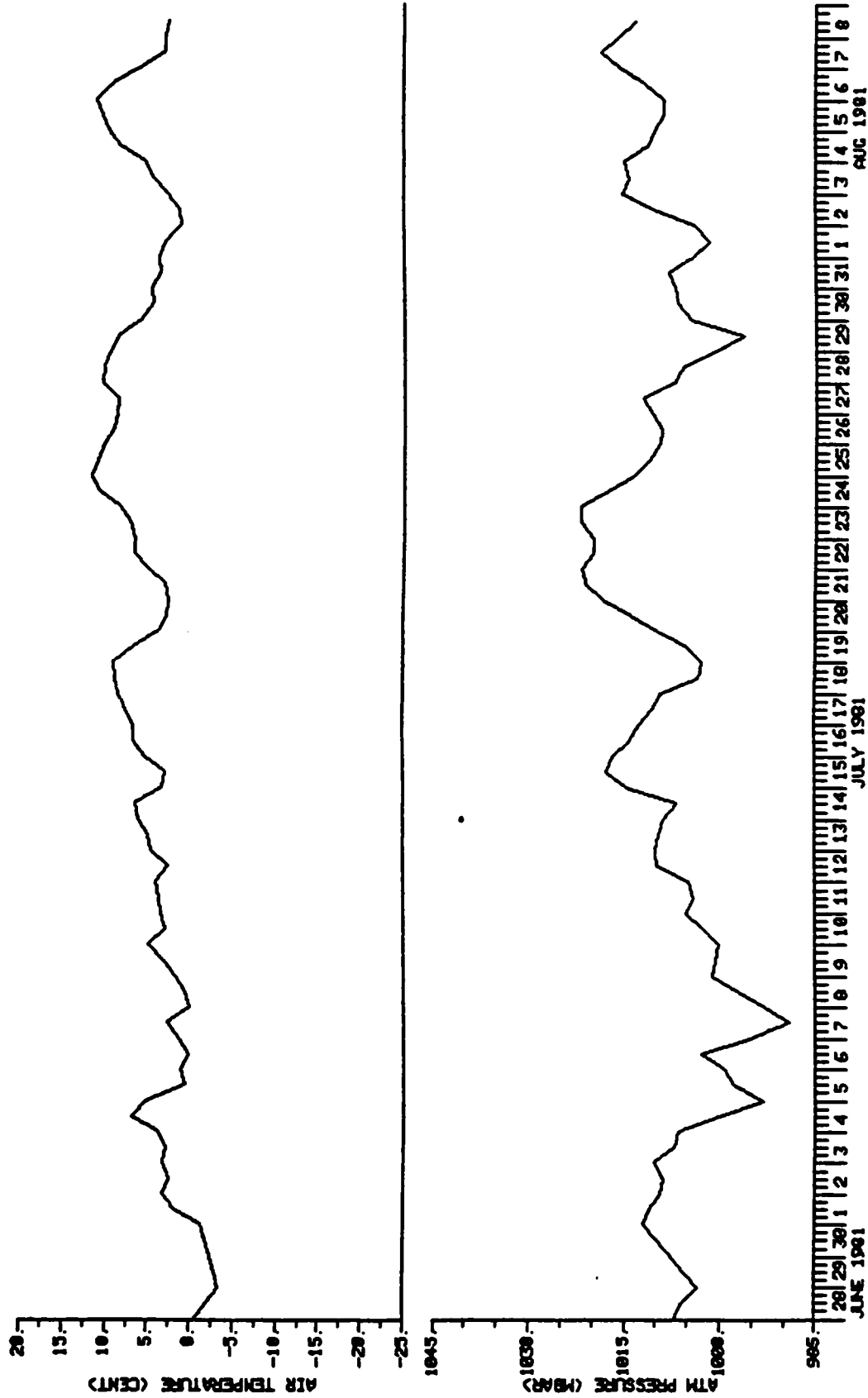
LONGSHORE 120 DEGREE8 TRUE AT 71.5 N 153.0 W



USCG BEAUFORT SEA STUDY

LONGSHORE 120 DEGREES TRUE AT 71.5 N 153.0 W

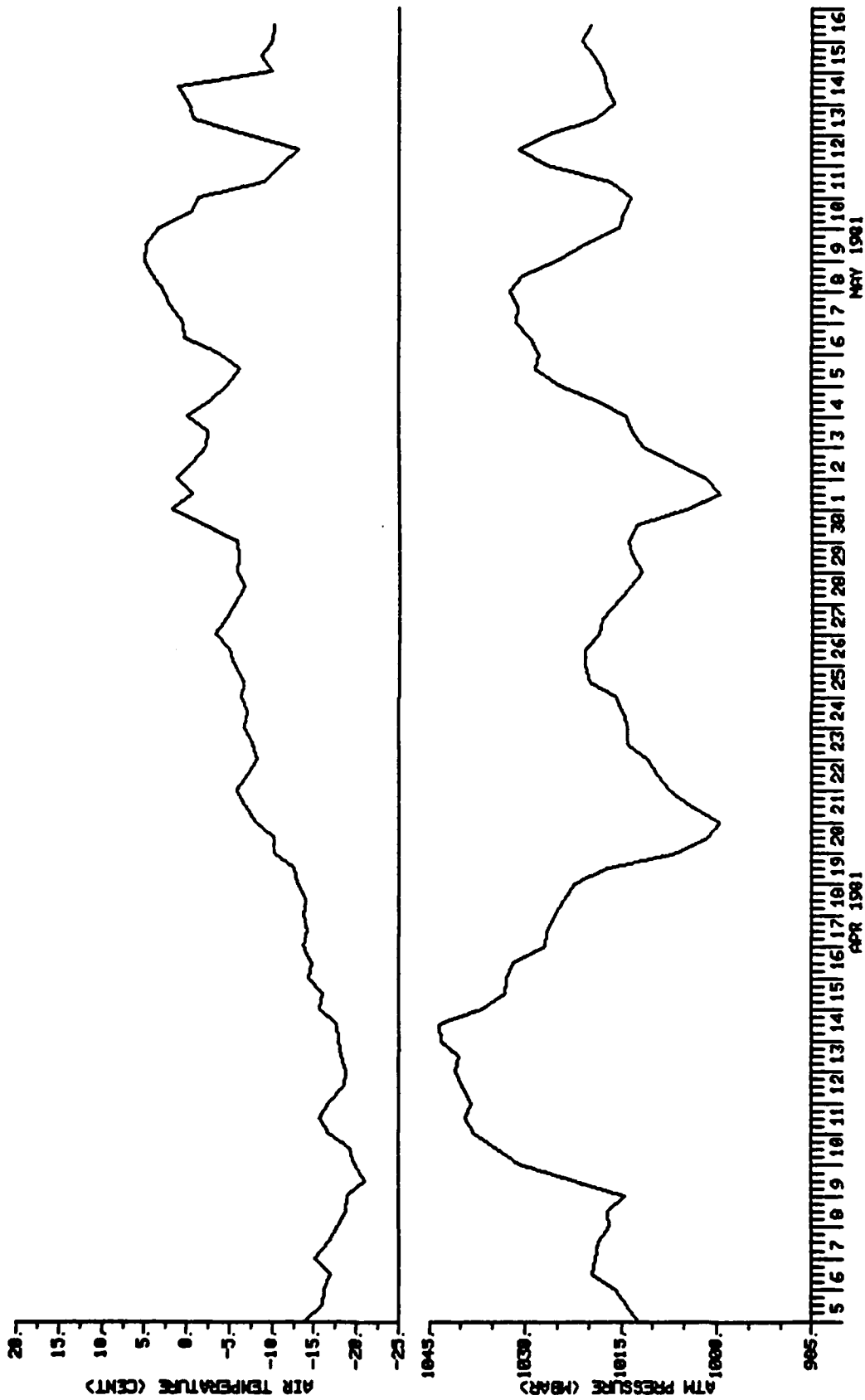
PAGE 3



USCG BEAUFORT SEA STUDY

LONGSHORE 90 DEGREES TRUE AT 70.5 N 139.0 W

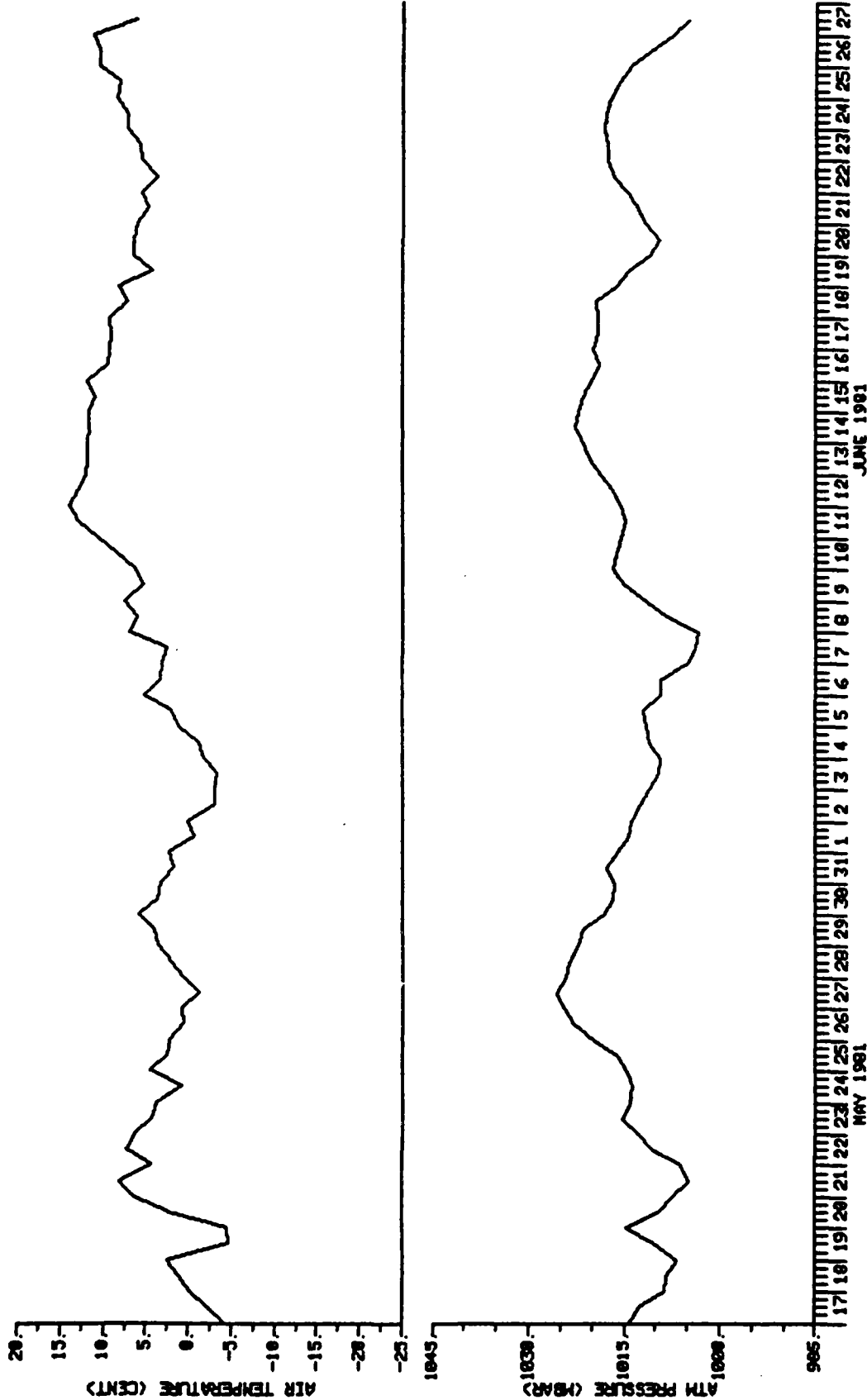
PAGE 1



USCG BEAUFORT SEA STUDY

LONGSHORE 90 DEGREES TRUE AT 70.5 N 139.0 W

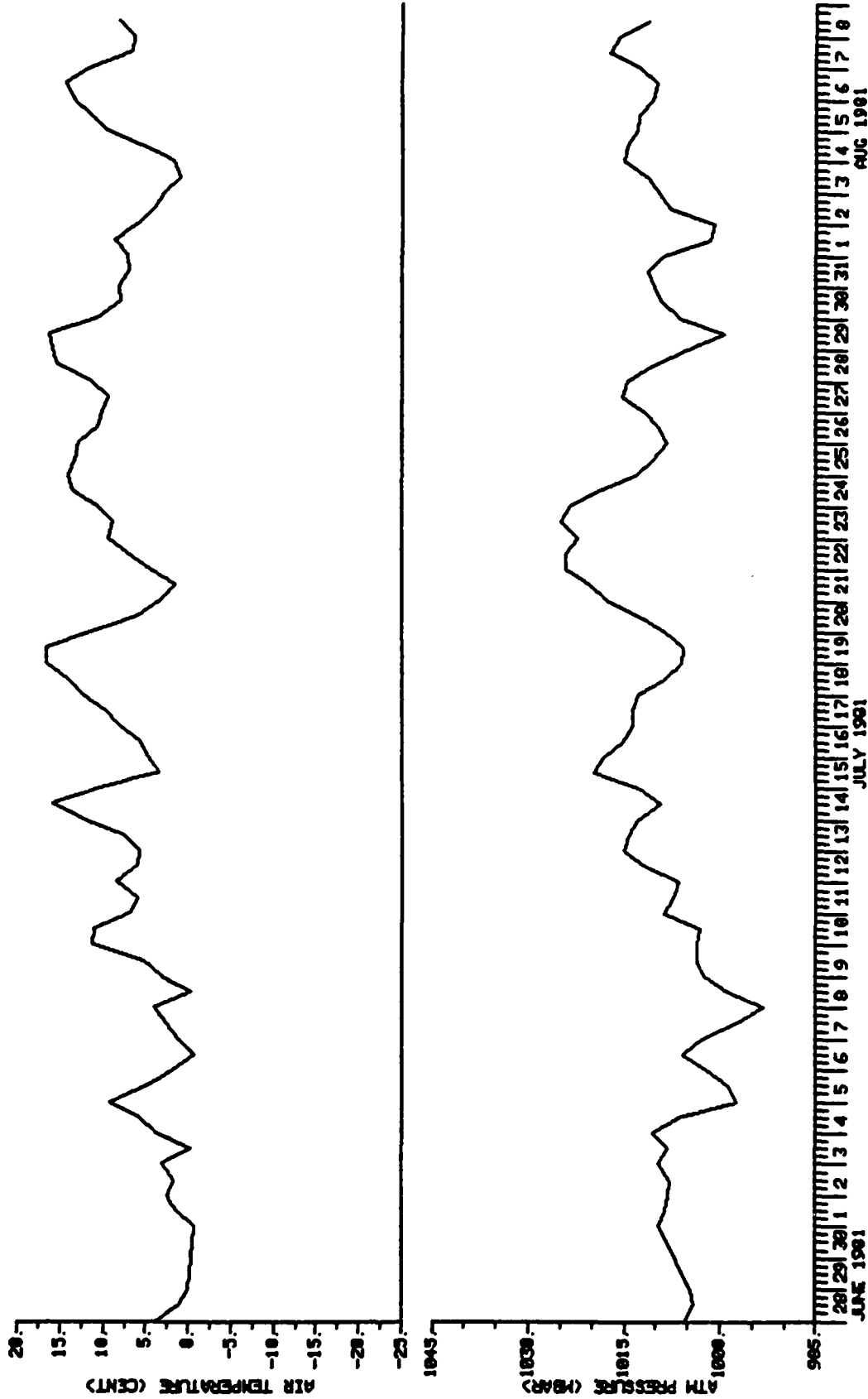
PAGE 2



USCG BEAUFORT SEA STUDY

LONGSHORE 90 DEGREES TRUE AT 70.5 N 139.0 W

PAGE 3



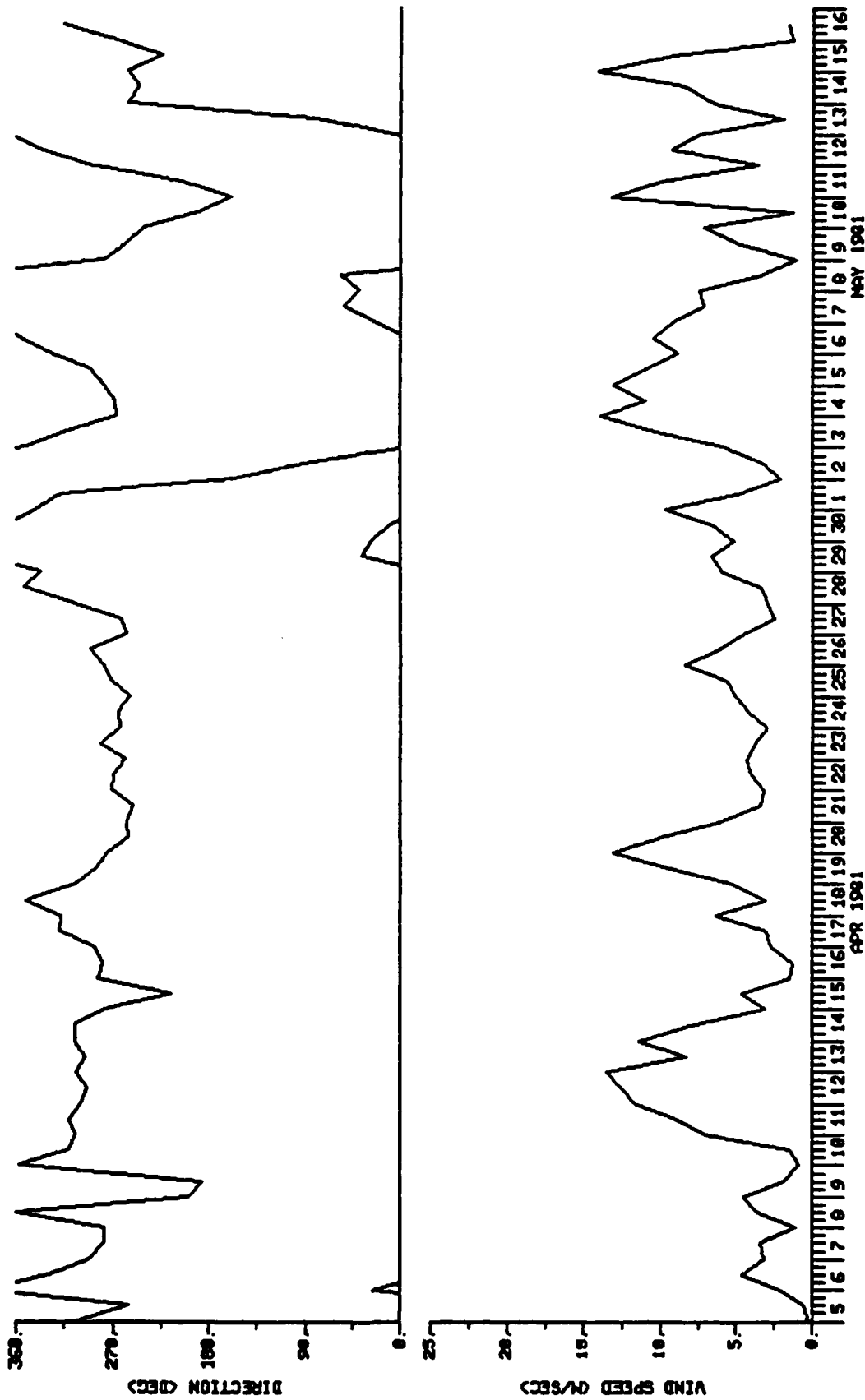
DATA APPENDIX 12

Time Series Plots of Geostrophic Wind Speeds and Direction
at Four Points in the Southern Beaufort and Chukchi Seas

USCG BEAUFORT SEA STUDY

71.5 N 153.0 W

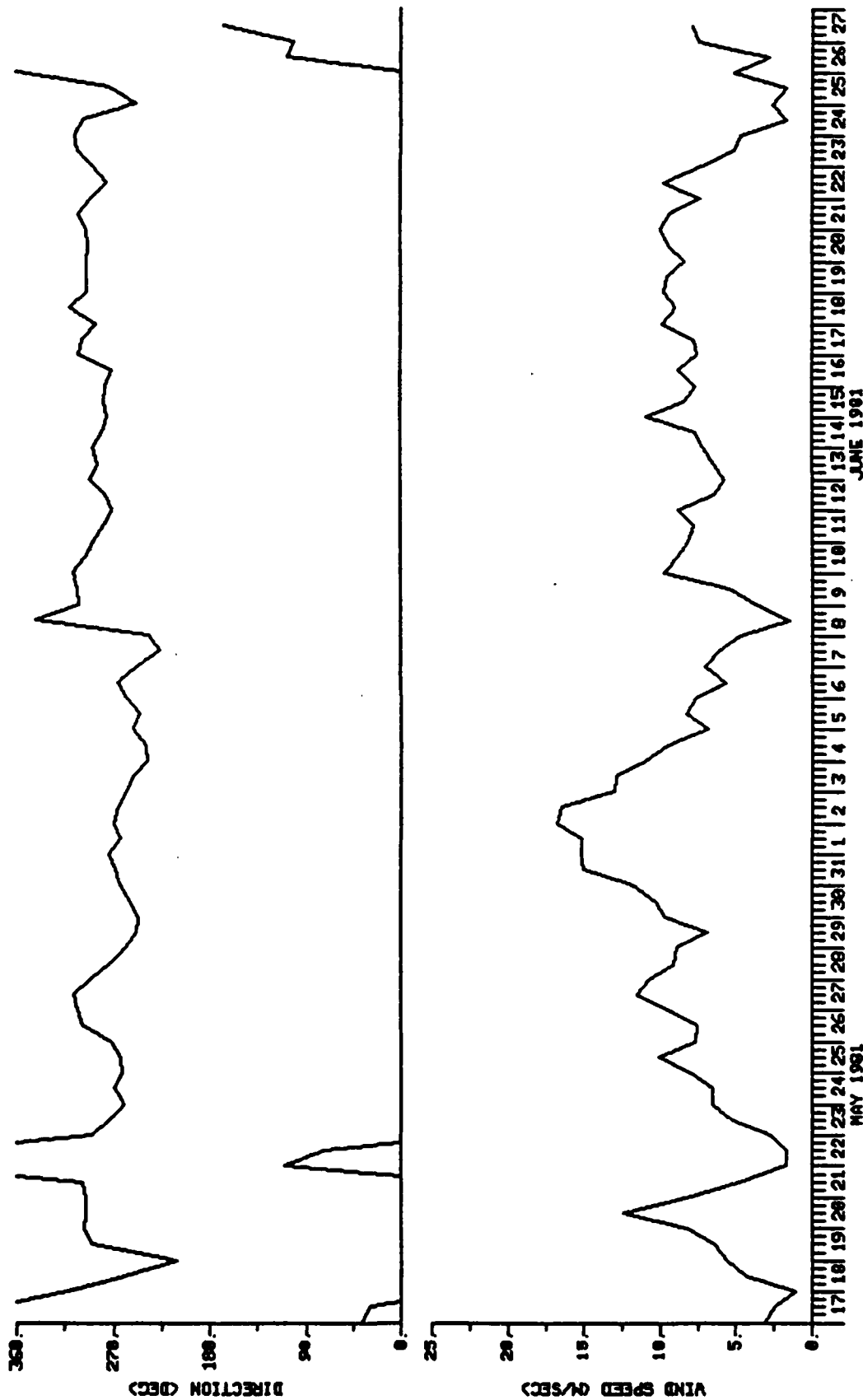
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

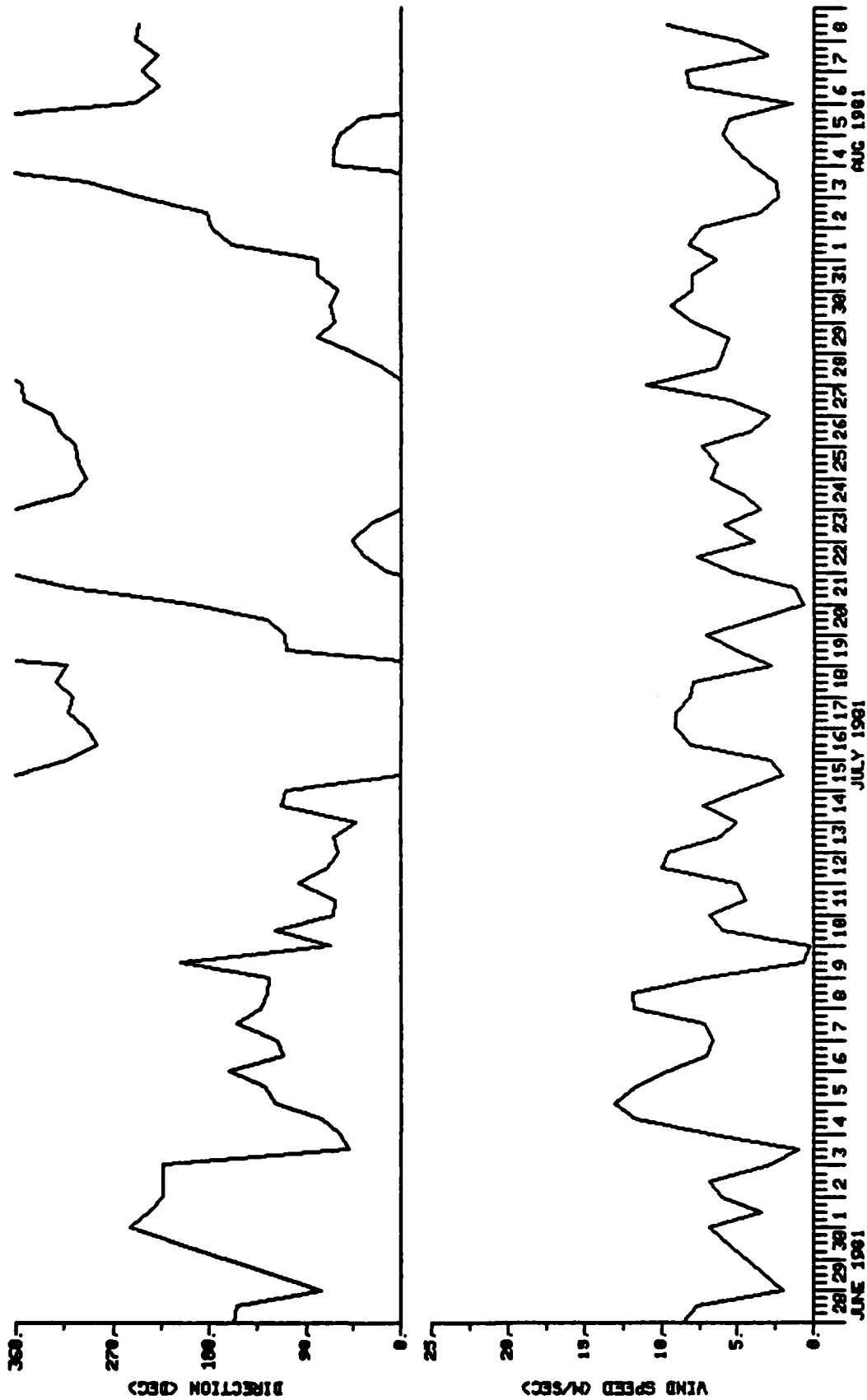
71.5 N 153.0 W



USCG BEAUFORT SEA STUDY

71.5 N 153.0 W

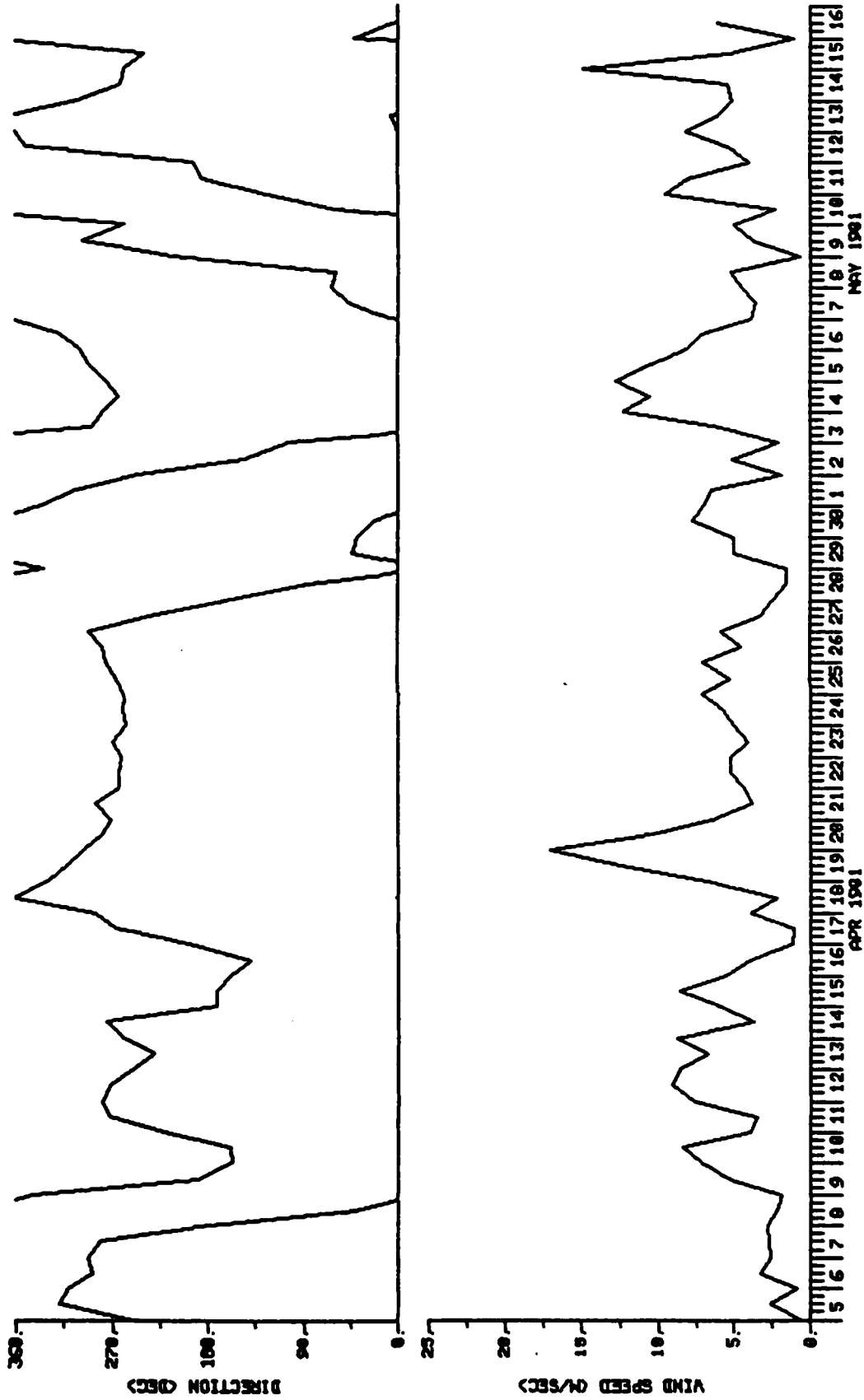
PAGE 3



USCG BEAUFORT SEA STUDY

71.0 N 145.0 W

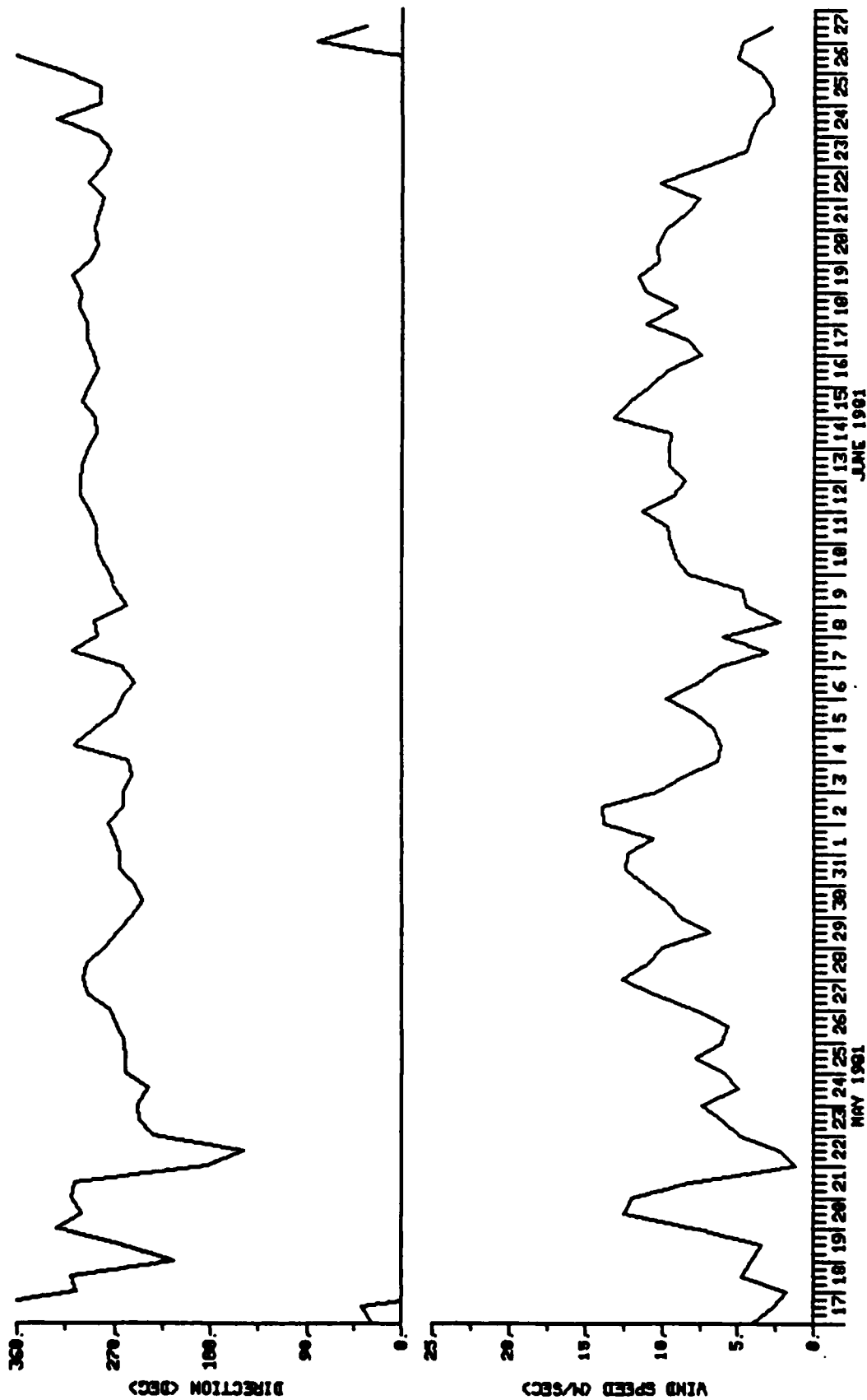
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

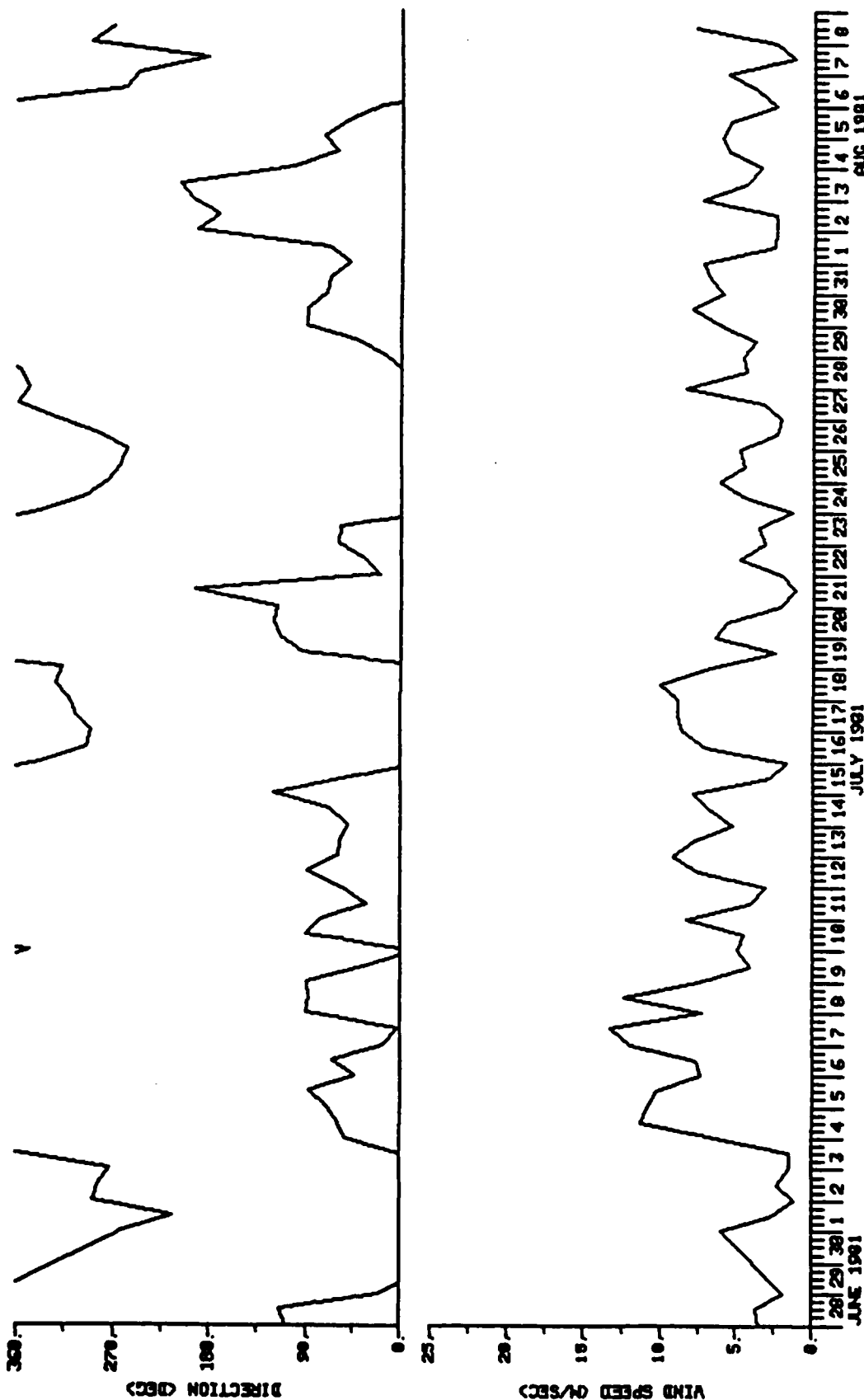
71.0 N 145.0 W



USCG BEAUFORT SEA STUDY

71.0 N 146.0 W

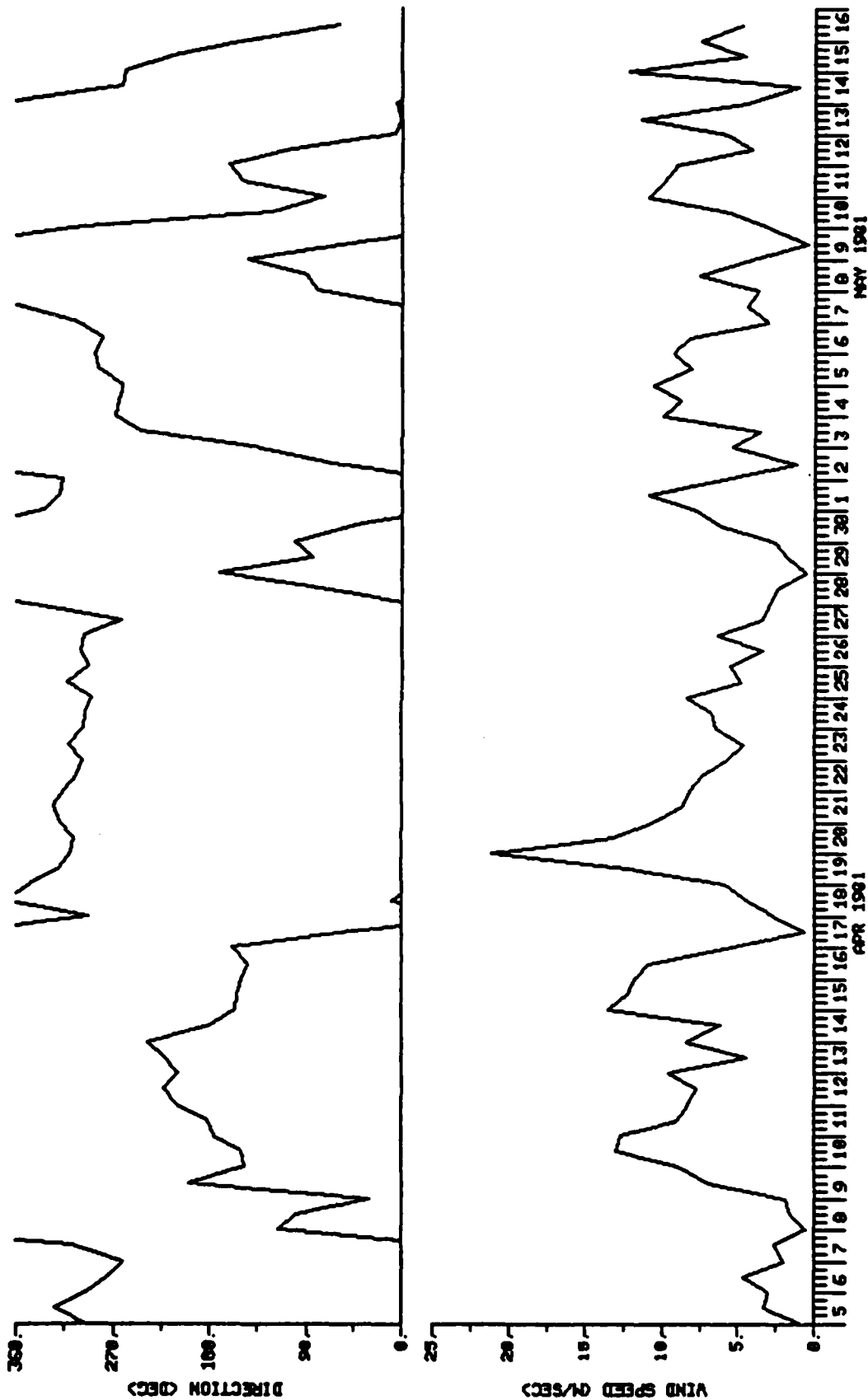
PAGE 3



USCG BEAUFORT SEA STUDY

70.5 N 139.0 W

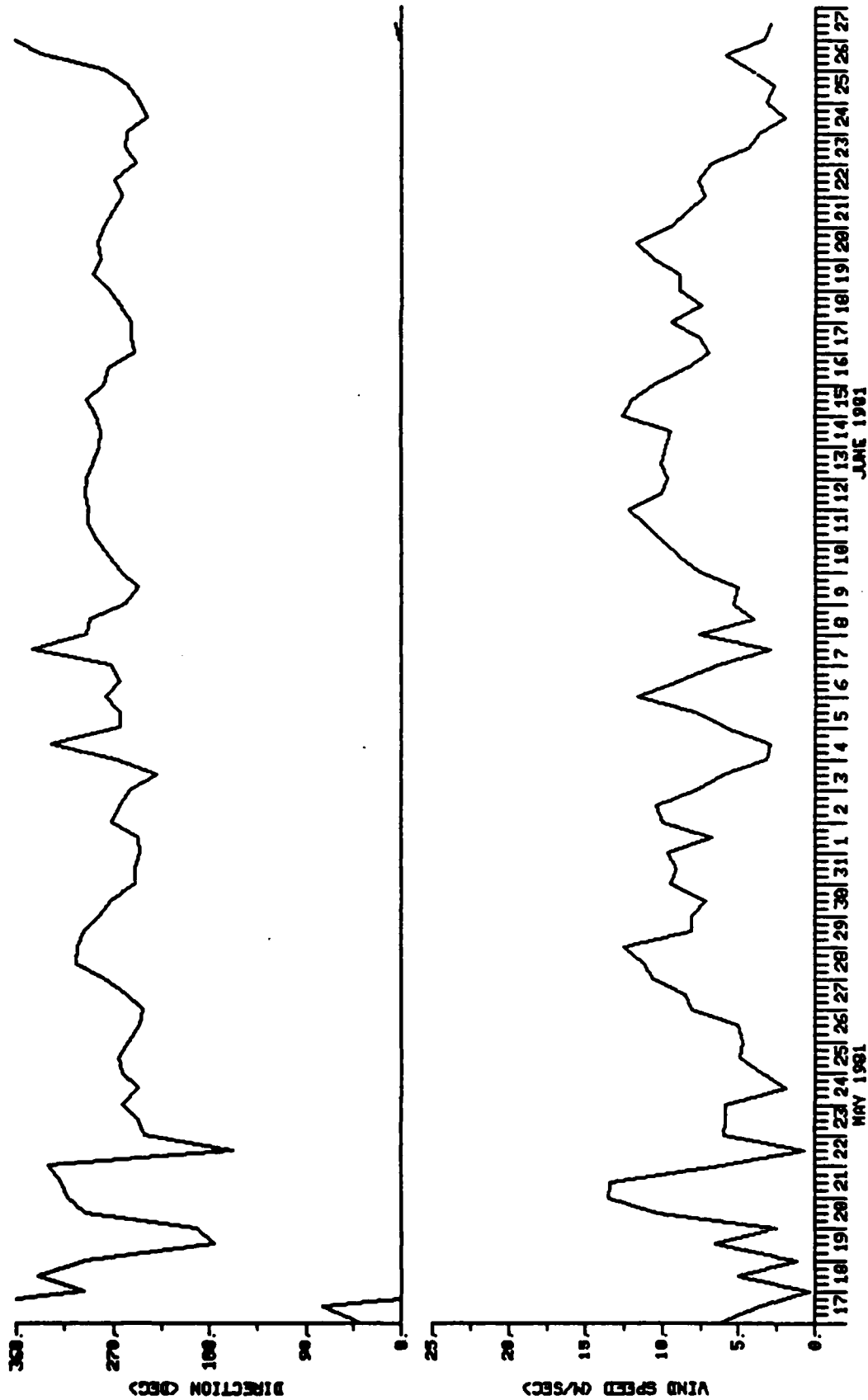
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

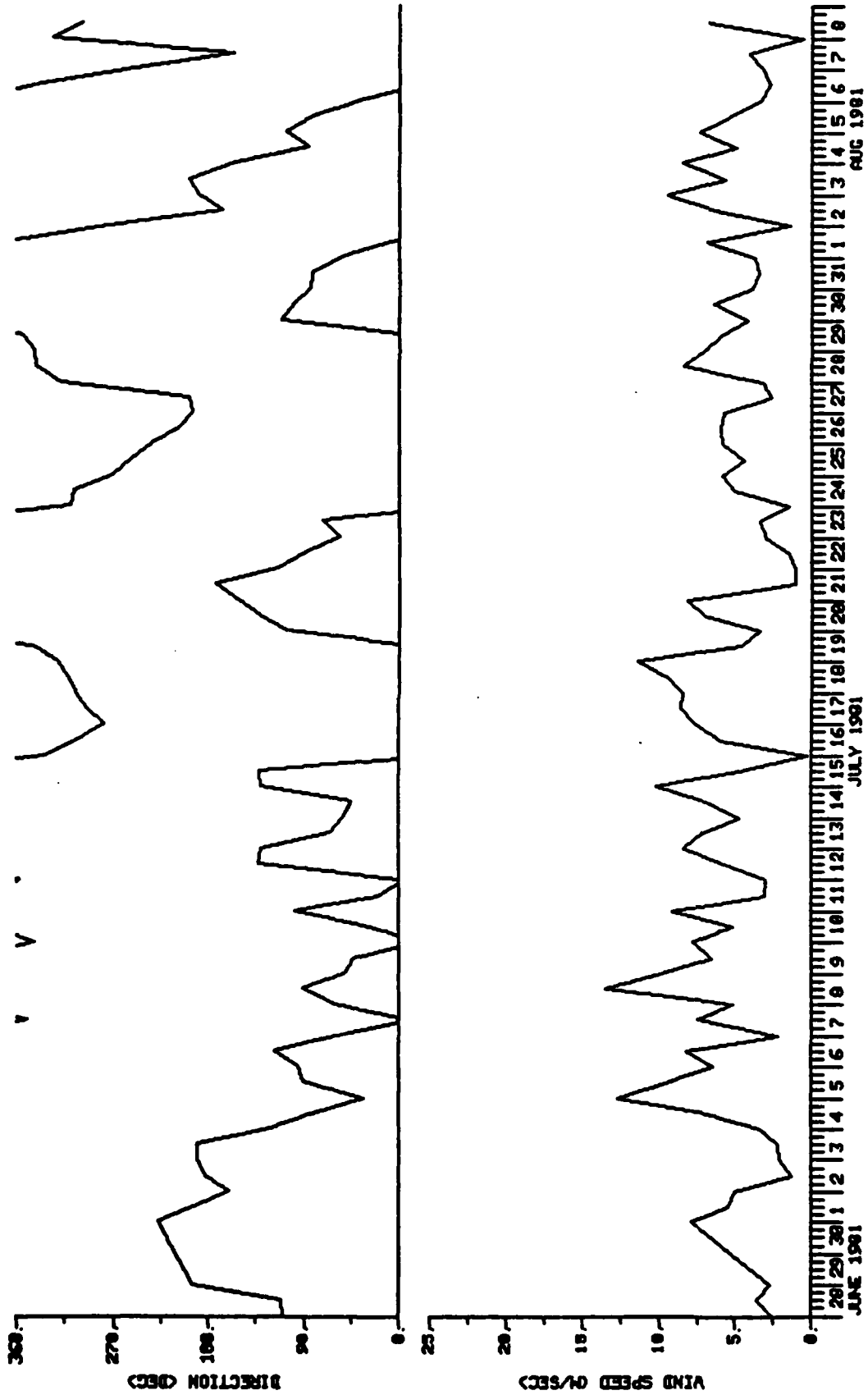
70.5 N 139.0 W



USCG BEAUFORT SEA STUDY

PAGE 3

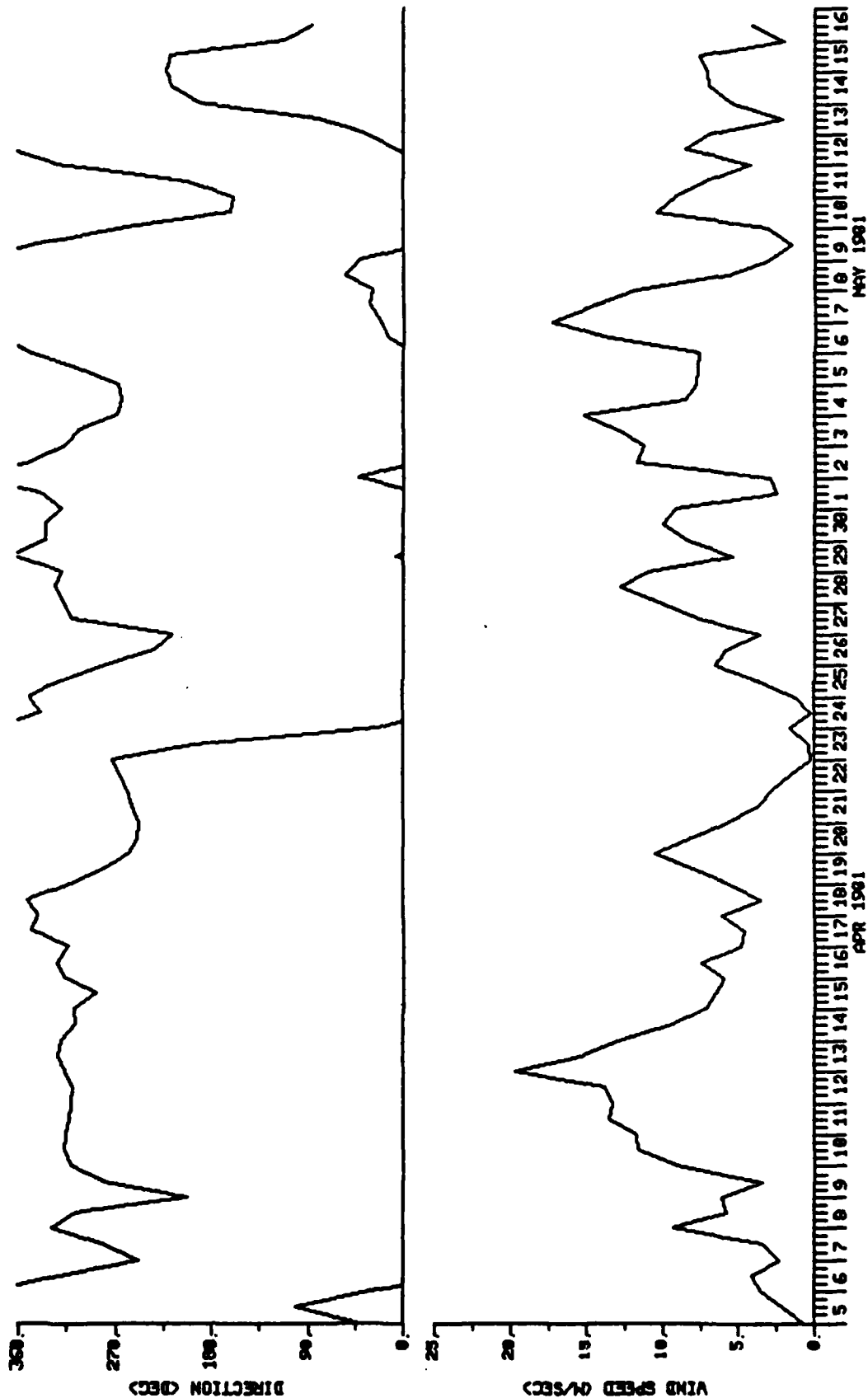
70.5 N 139.0 W



USCG BEAUFORT SEA STUDY

70.0 N 165.0 W

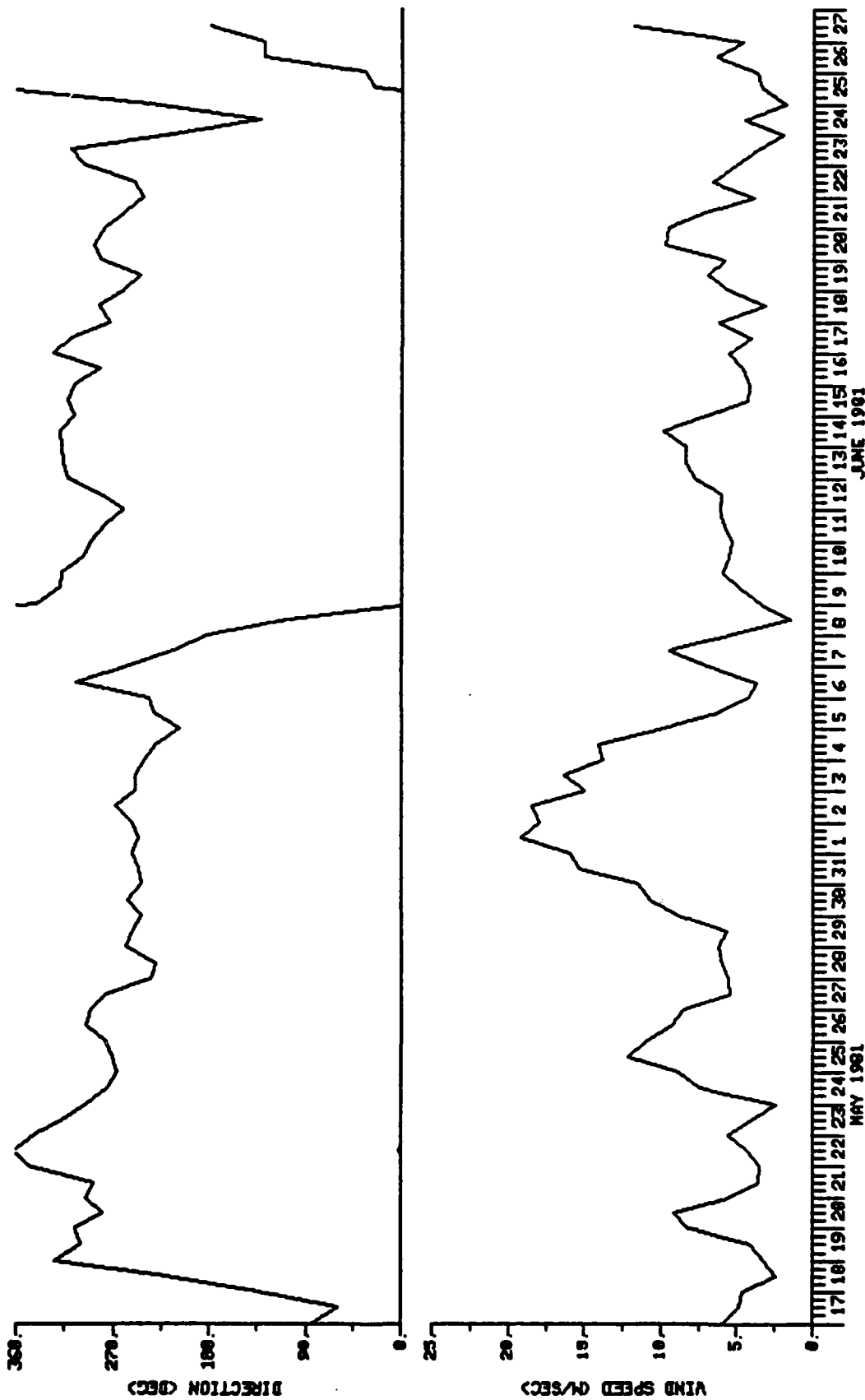
PAGE 1



USCG BEAUFORT SEA STUDY

PAGE 2

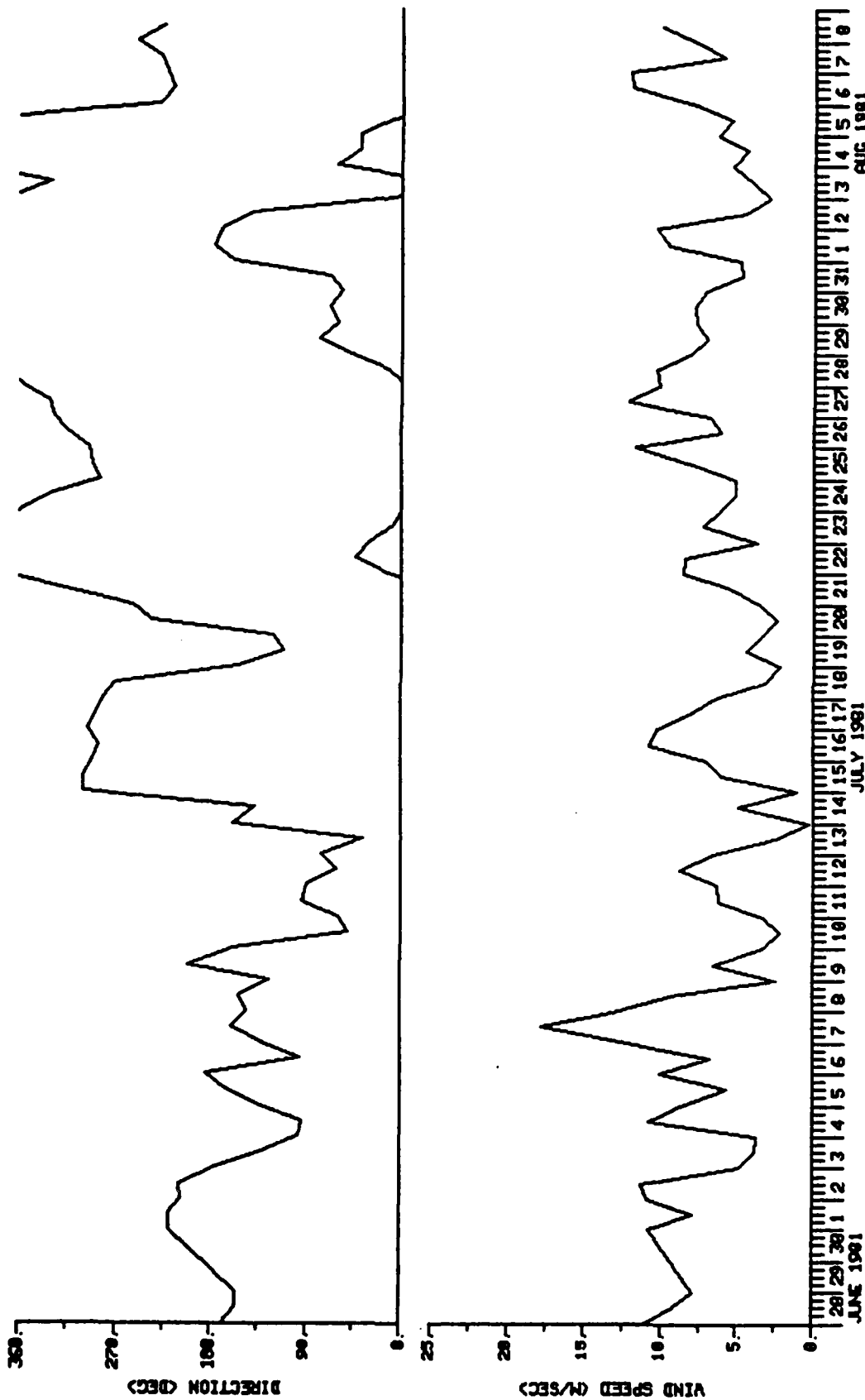
70.0 H 165.0 V



USCG BEAUFORT SEA STUDY

PAGE 3

70.0 N 165.0 W



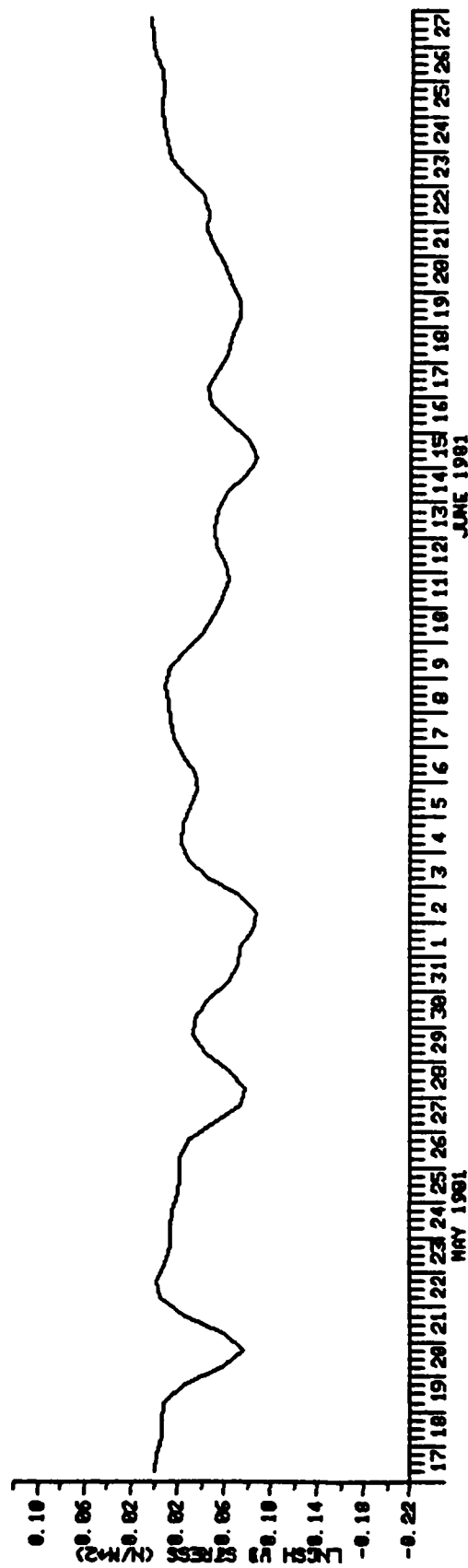
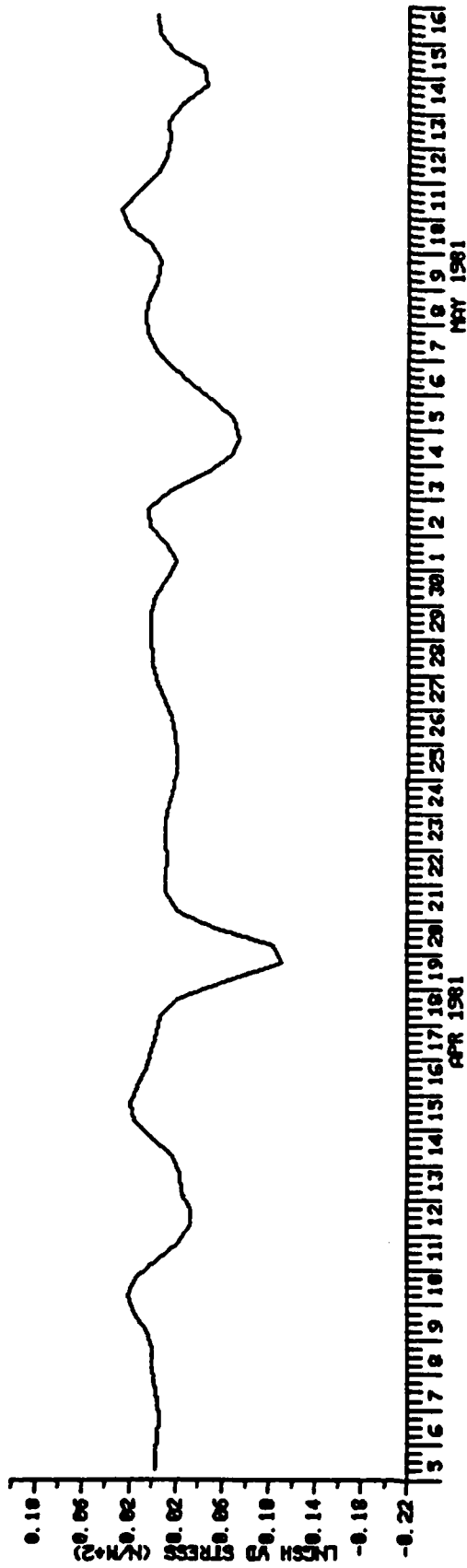
DATA APPENDIX 13

Time Series Plots of the Longshore and Offshore Components
of the Wind Stress

USCG BEAUFORT SEA STUDY

PAGE 1

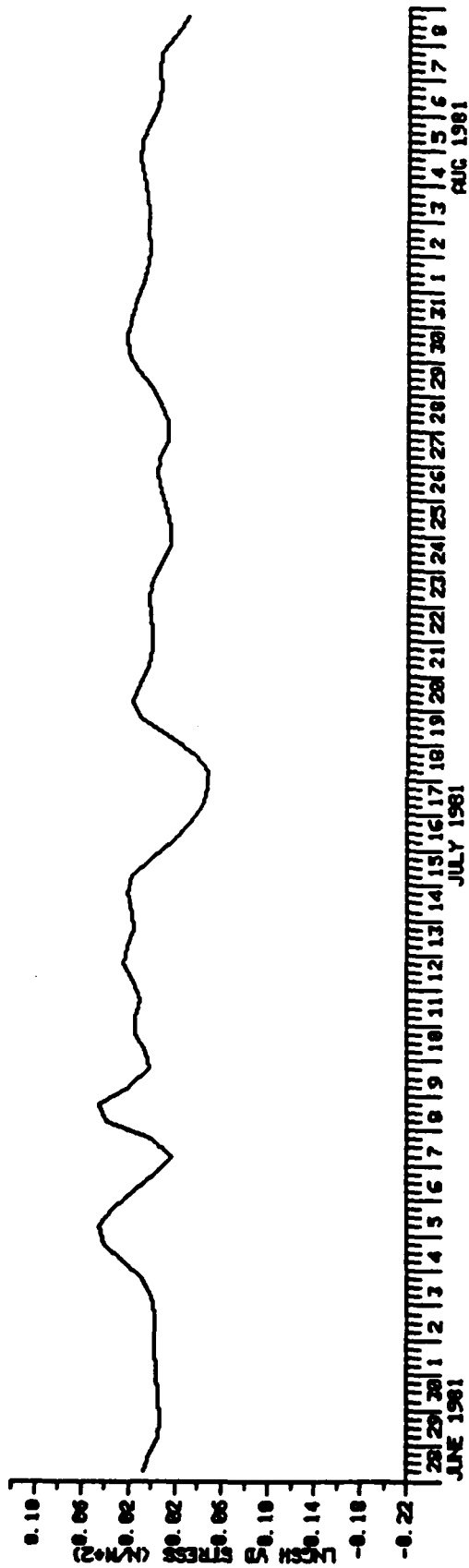
LONGSHORE 110 DEGREES TRUE AT 71.0 N 146.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

PAGE 2

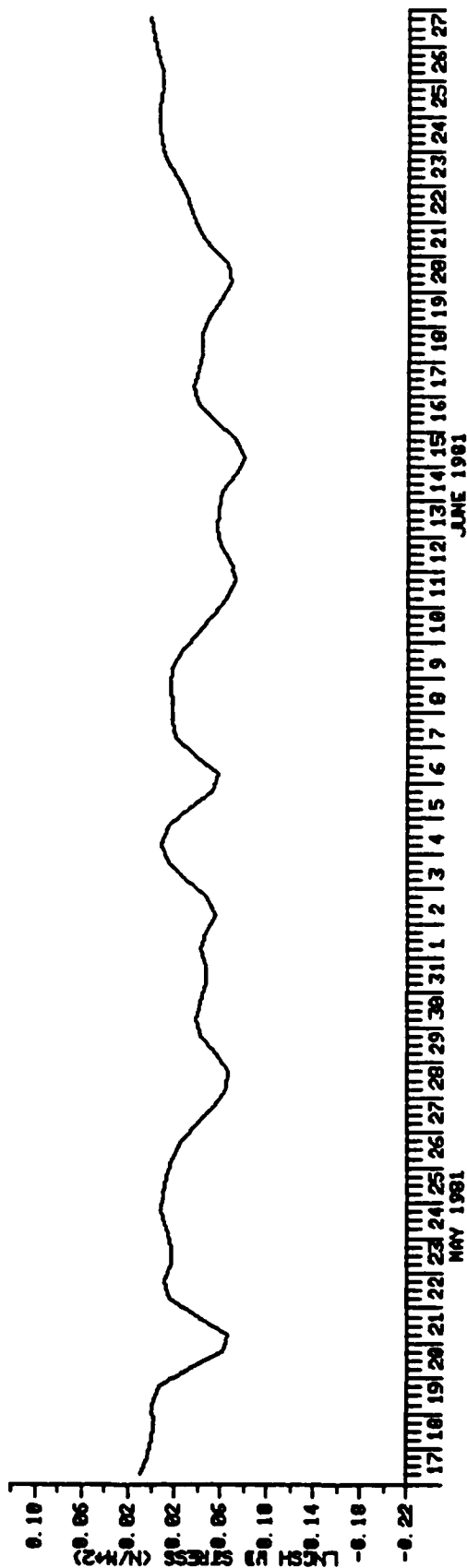
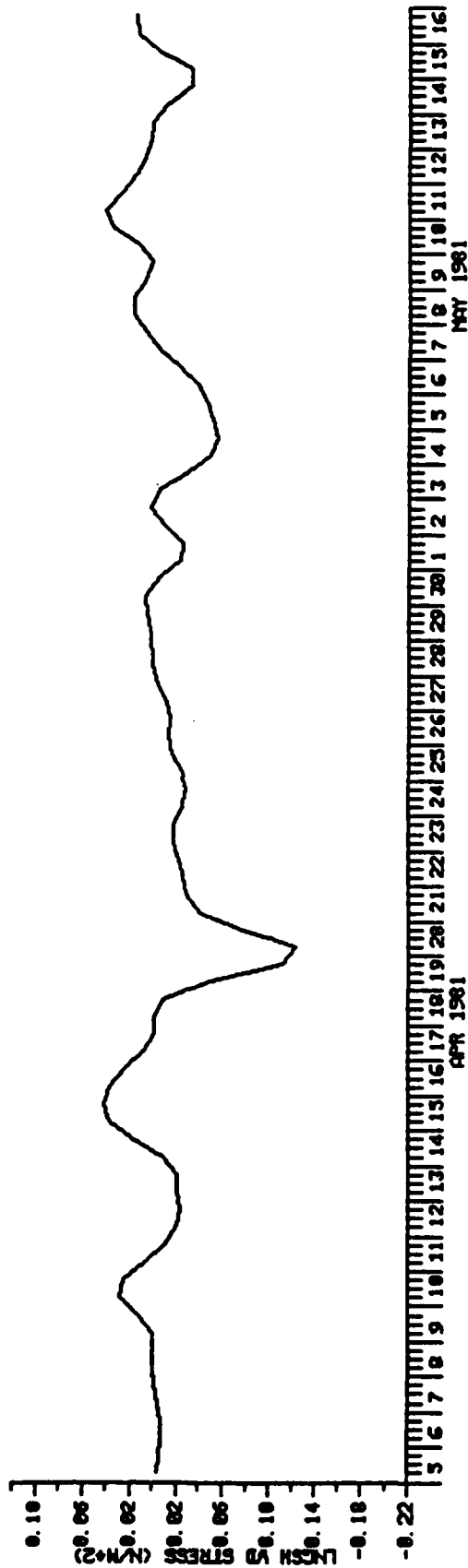
LONGSHORE 110 DEGREES TRUE AT 71.0 N 146.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

PAGE 1

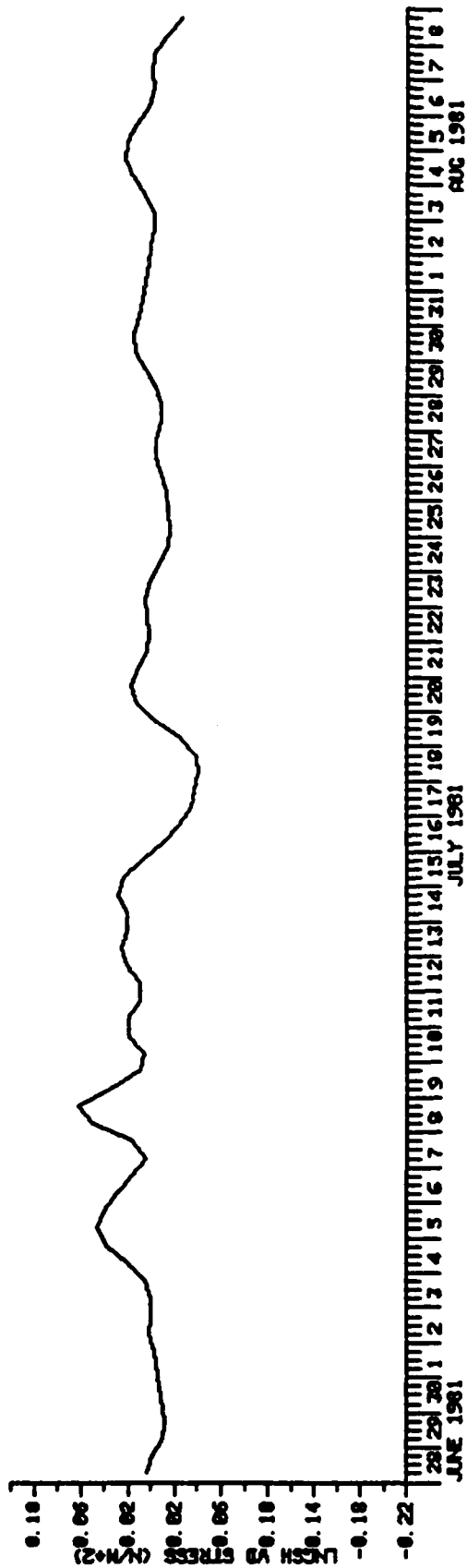
LONGSHORE 90 DEGREES TRUE AT 70.5 N 139.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

PAGE 2

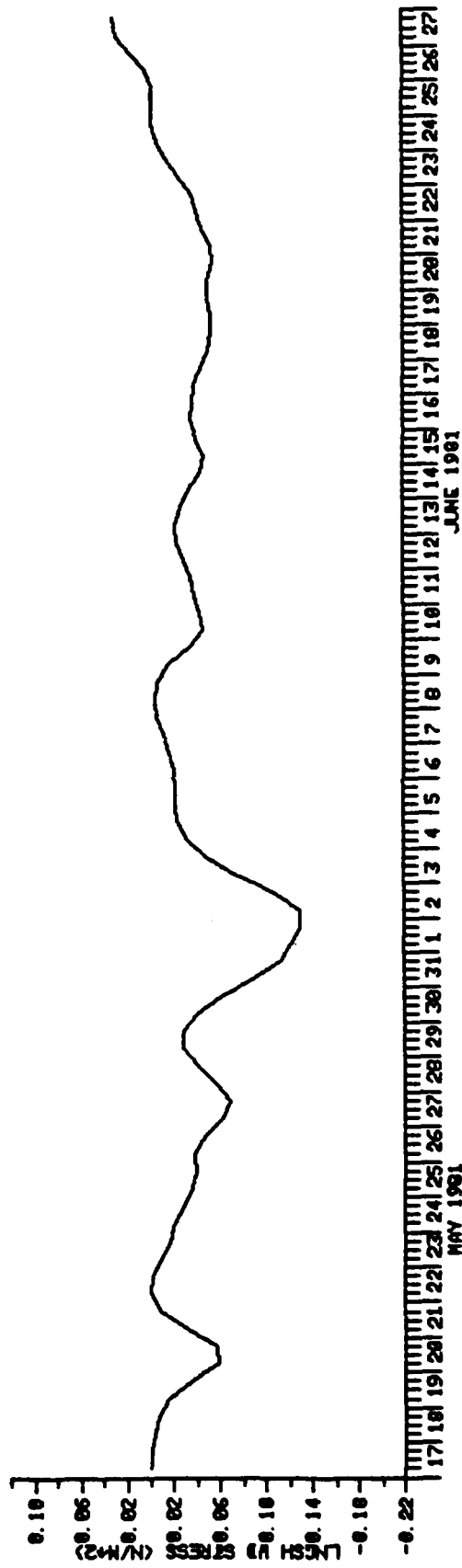
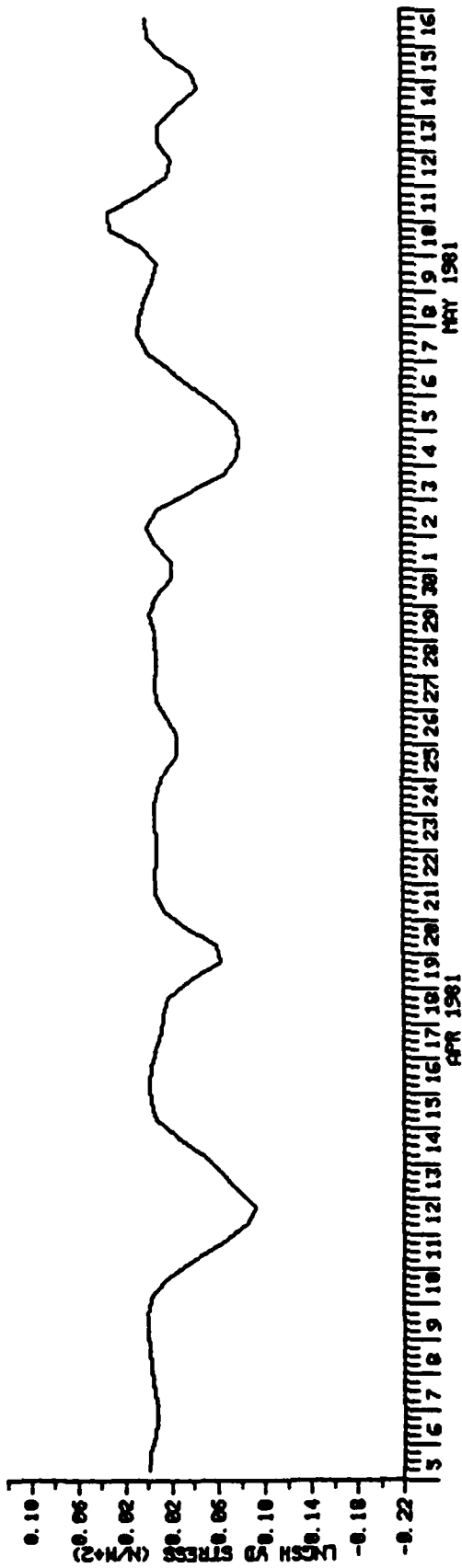
LONGSHORE 90 DEGREES TRUE AT 70.5 N 139.0 W FILTERED A_2



USCG BEAUFORT SEA STUDY

PAGE 1

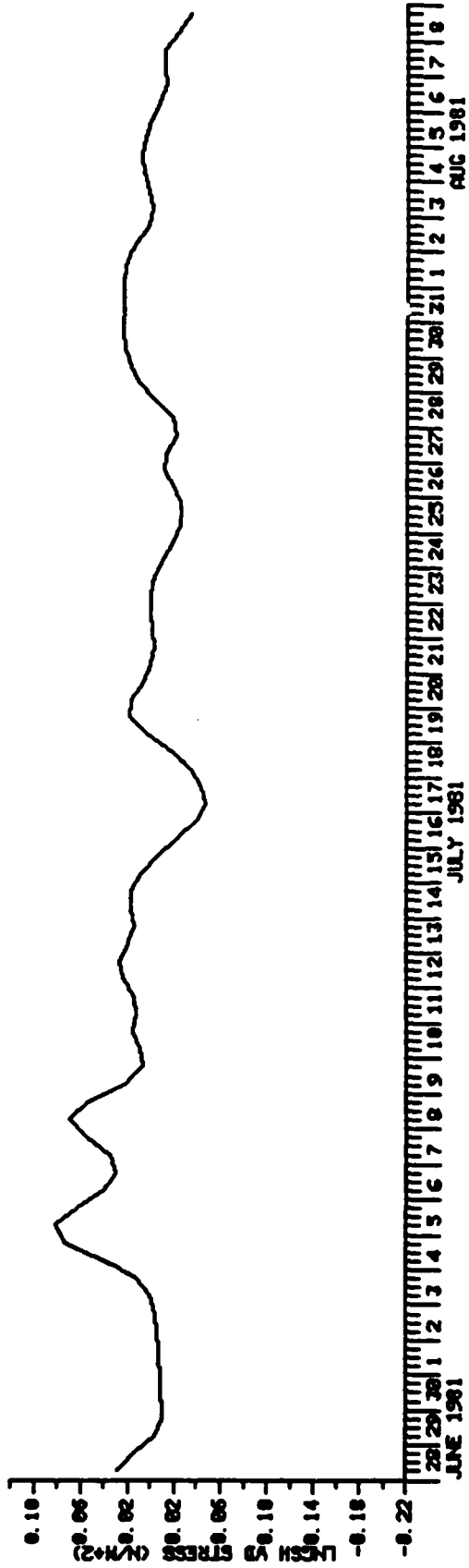
LONGSHORE 120 DEGREES TRUE AT 71.5 N 153.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

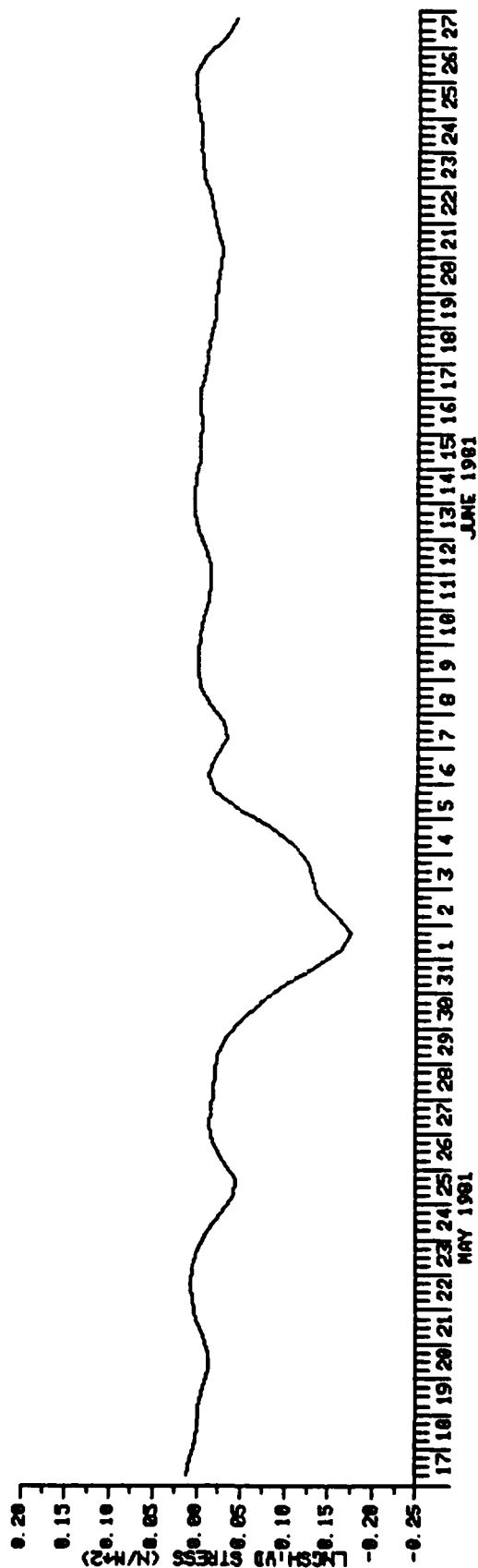
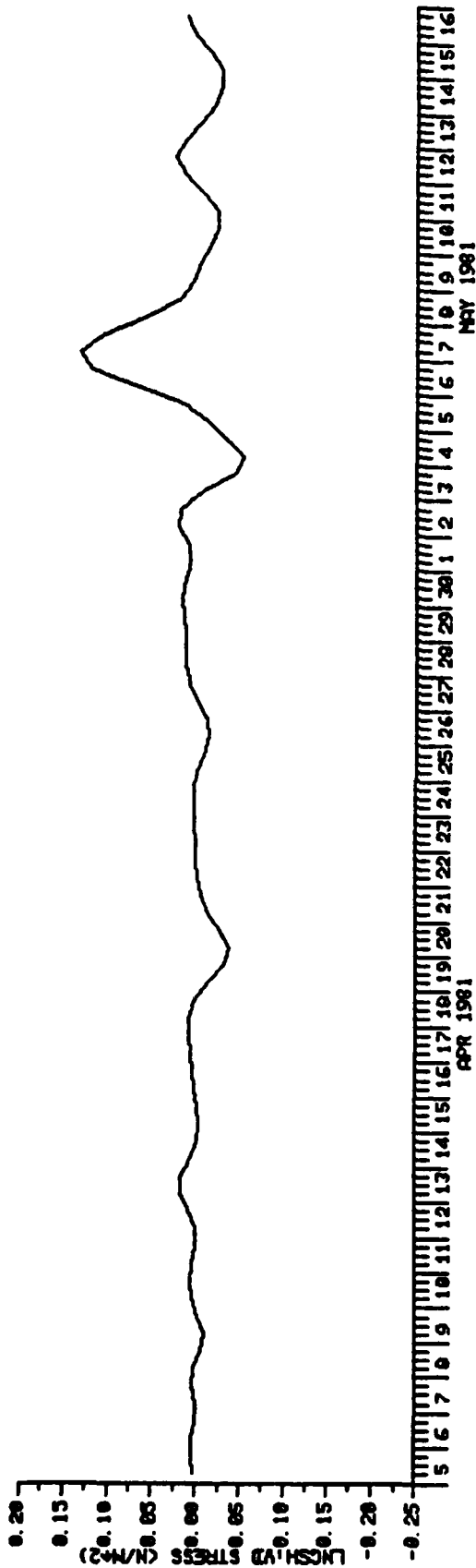
LONGSHORE 120 DEGREES TRUE AT 71.5 N 153.0 W FILTERED A₂

PAGE 2



USCG BEAUFORT SEA STUDY

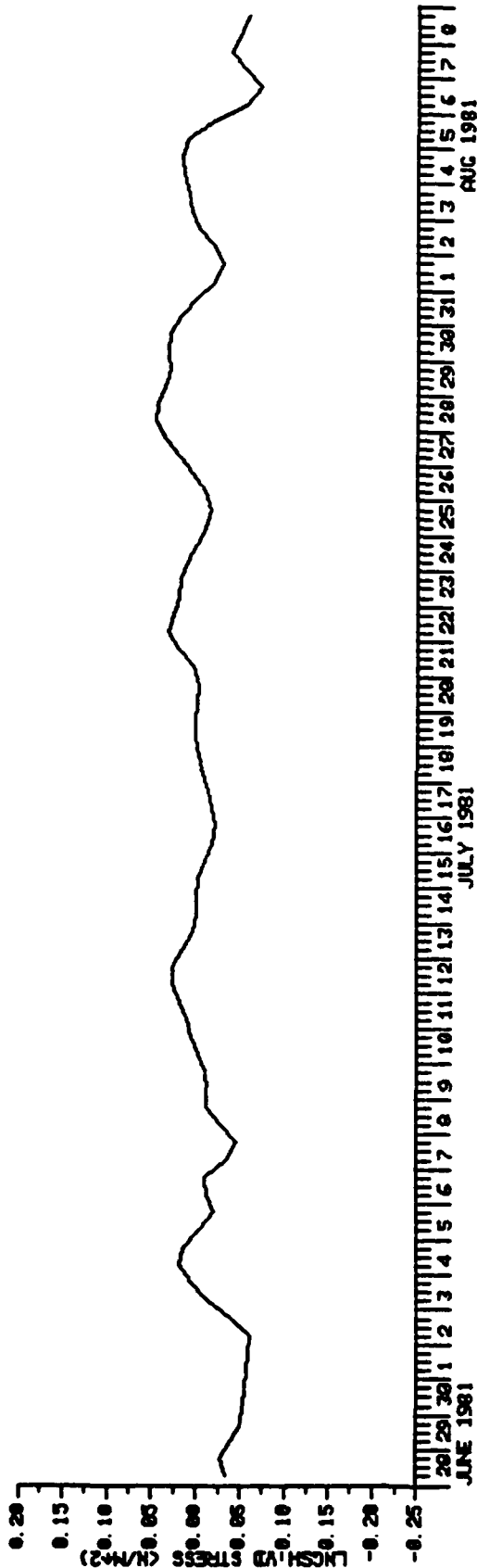
LONGSHORE 42 DEGREES TRUE AT 70.0 N 163.0 V FILTERED A₂



USCG BEAUFORT SEA STUDY

LONGSHORE 42 DEGREES TRUE AT 70.0 N 165.0 W FILTERED A_2^2

PAGE 2



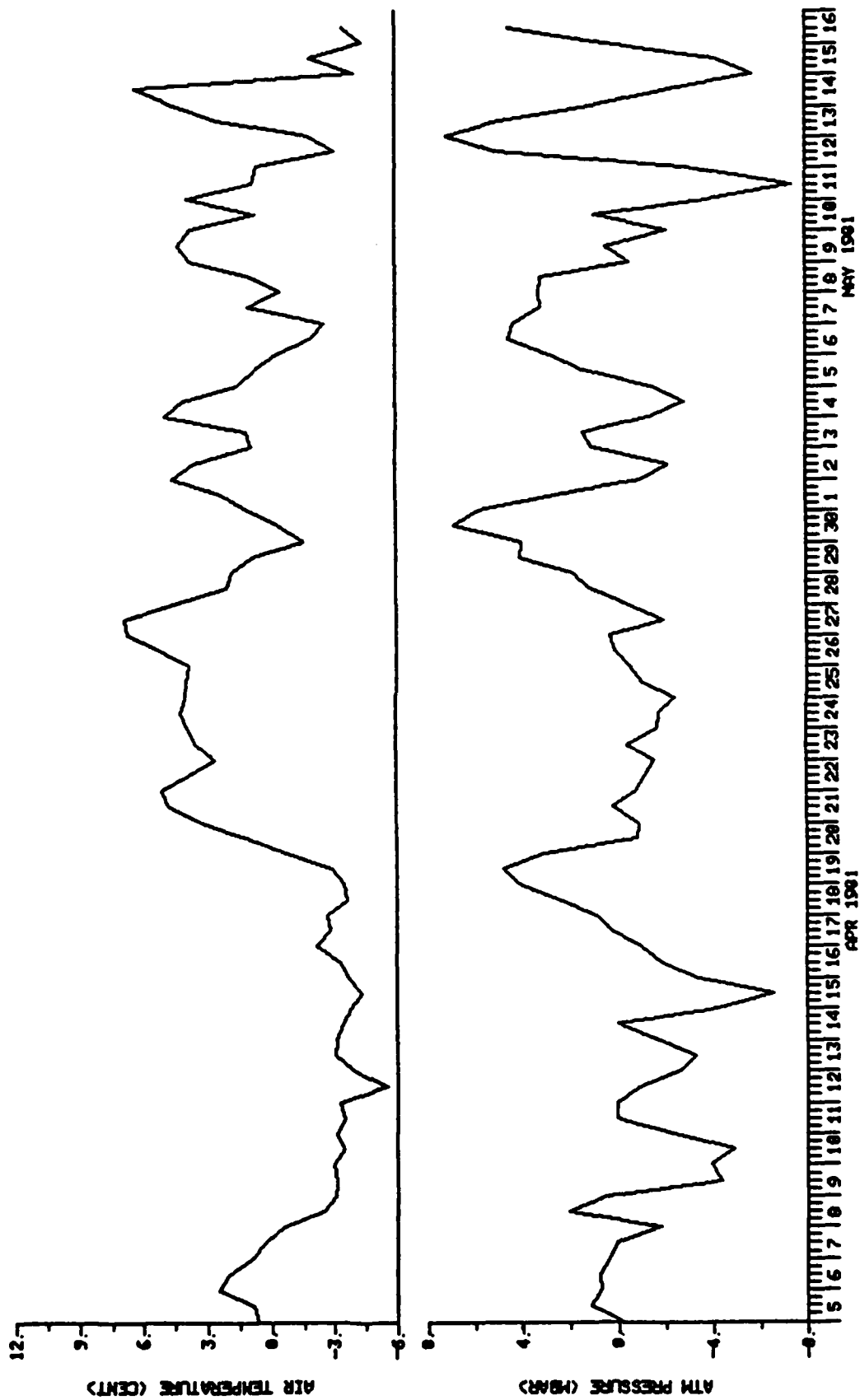
DATA APPENDIX 14

Time Series Plots of the Differences in Atmospheric Pressure
and Air Temperature among Selected Points

USCG BEAUFORT SEA STUDY

PAGE 1

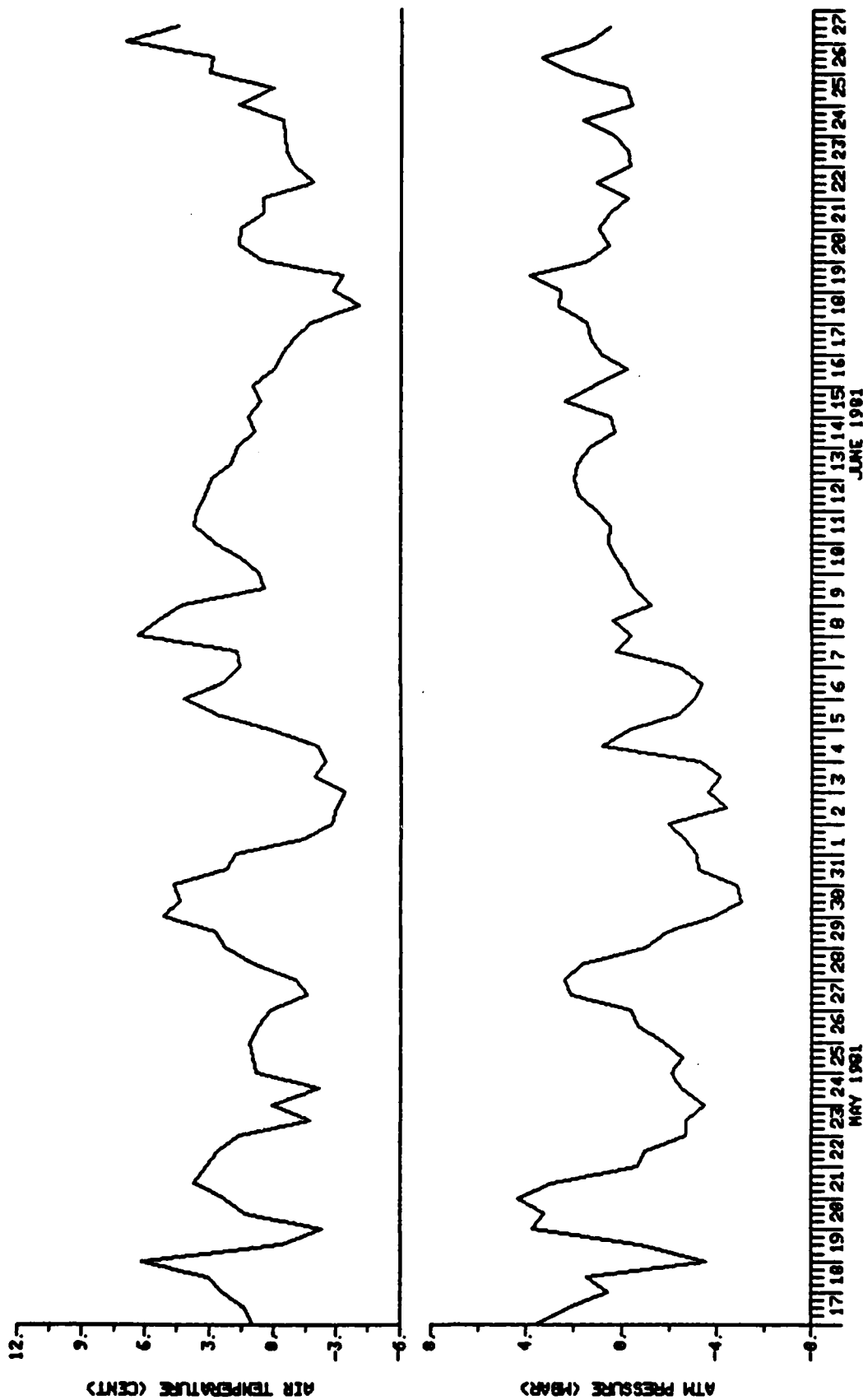
DIFFERENCE BETWEEN LOCATIONS 70.5 W 139.0 N AND 71.5 N 153.0 W



USCG BEAUFORT SEA STUDY

DIFFERENCE BETWEEN LOCATIONS 70.5 V 139.0 H AND 71.5 H 153.0 V

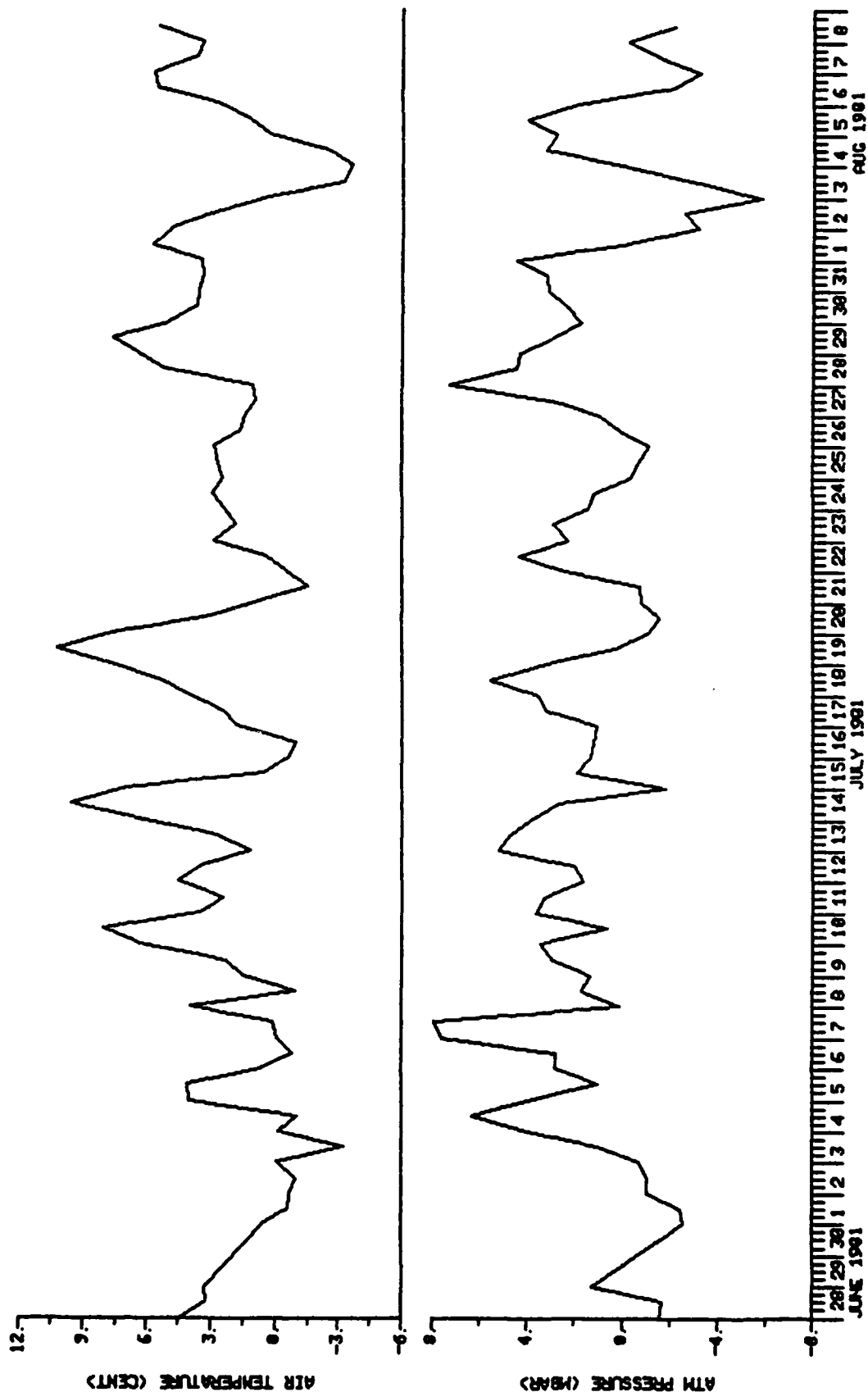
PAGE 2



USCG BEAUFORT SEA STUDY

DIFFERENCE BETWEEN LOCATIONS 70.5 W 139.0 N AND 71.5 N 153.0 W

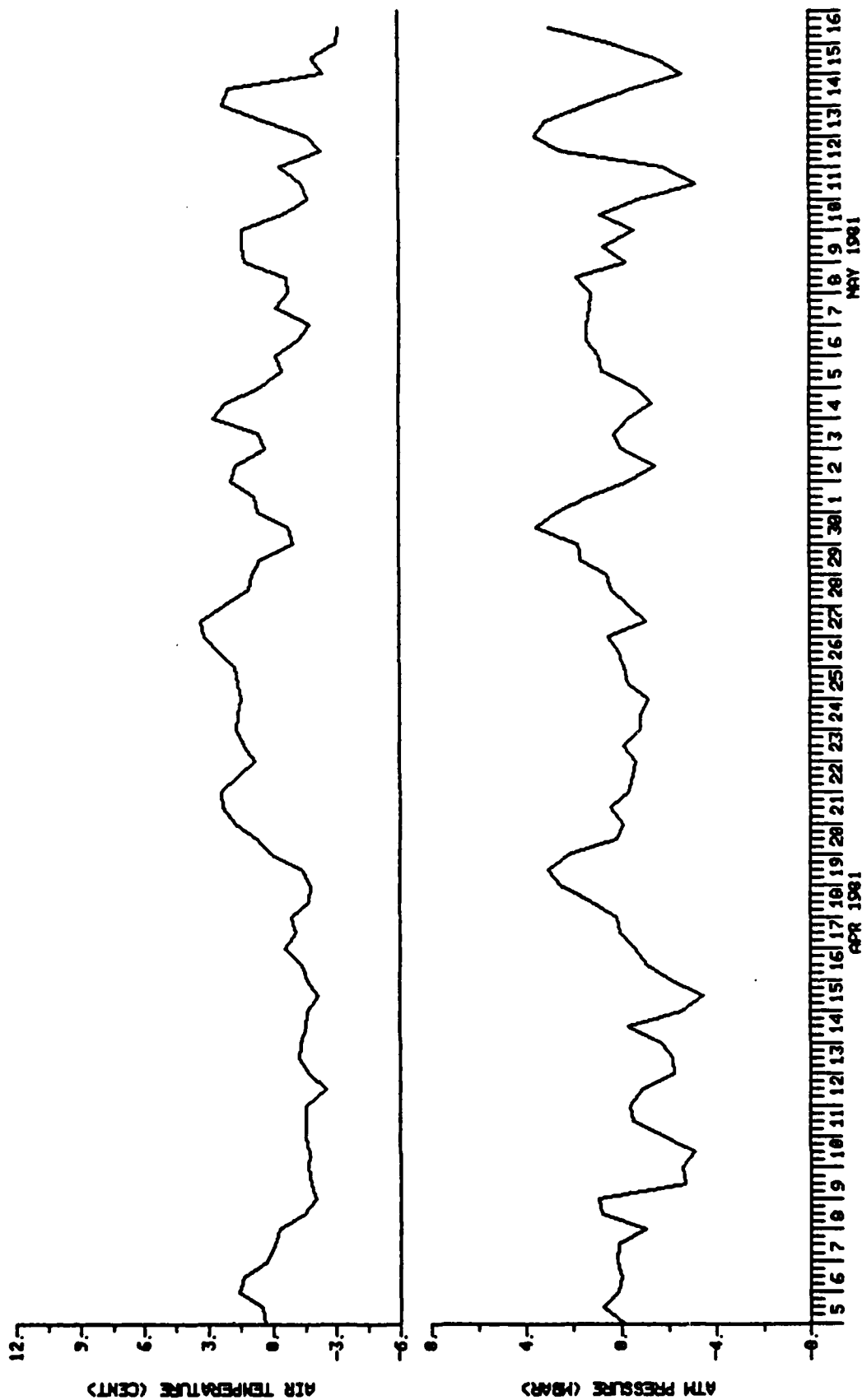
PAGE 3



USCG BEAUFORT SEA STUDY

PAGE 1

DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.0 N 146.0 W



USCG BEAUFORT SEA STUDY

DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.0 N 146.0 W

PAGE 2

AIR TEMPERATURE (CENT)

12

9

6

3

0

-3

-6

ATM PRESSURE (MBAR)

0

4

8

12

0

17

18

19

20

21

22

23

24

25

26

27

MAY 1991

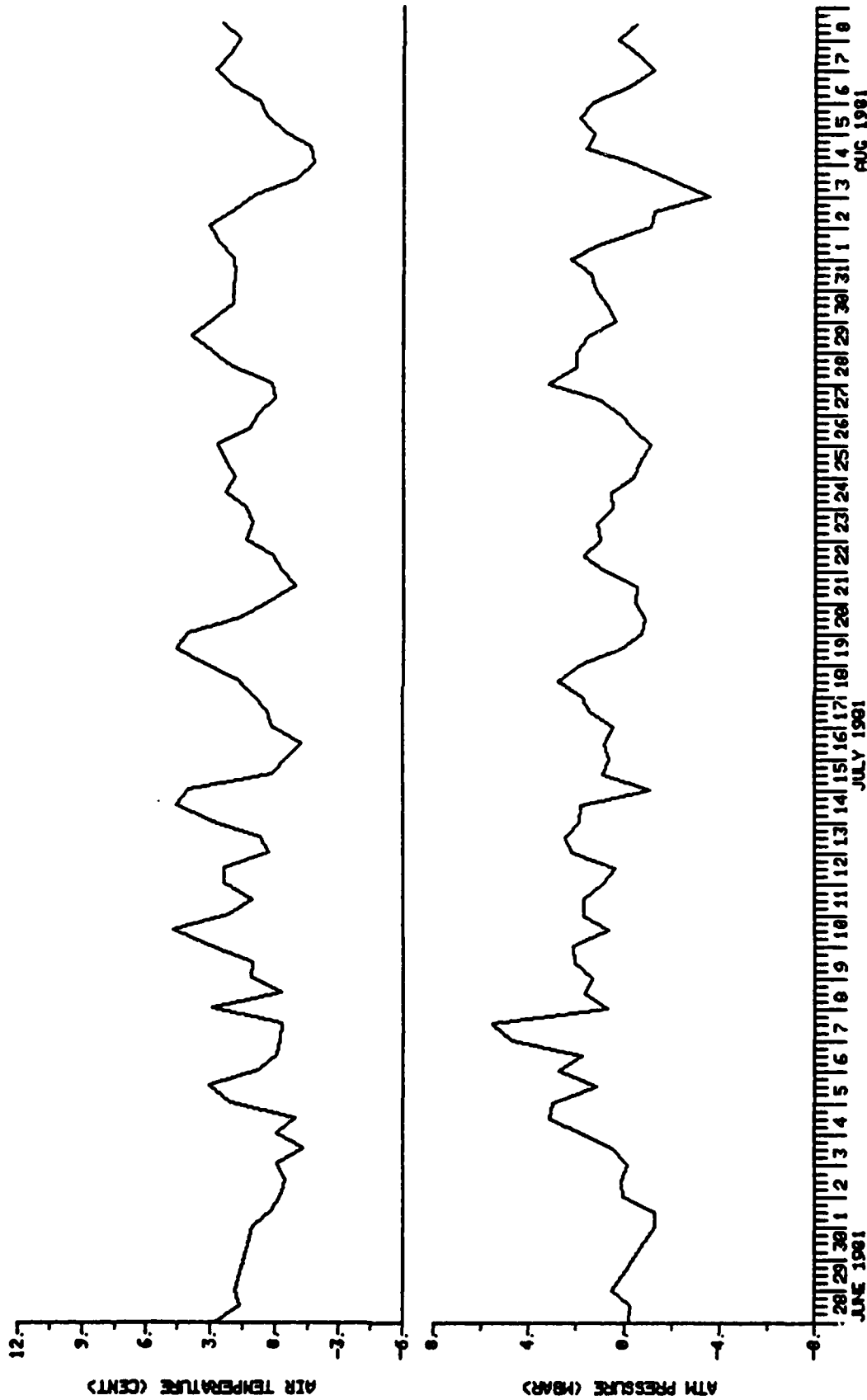
JUNE 1991

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

USCG BEAUFORT SEA STUDY

PAGE 3

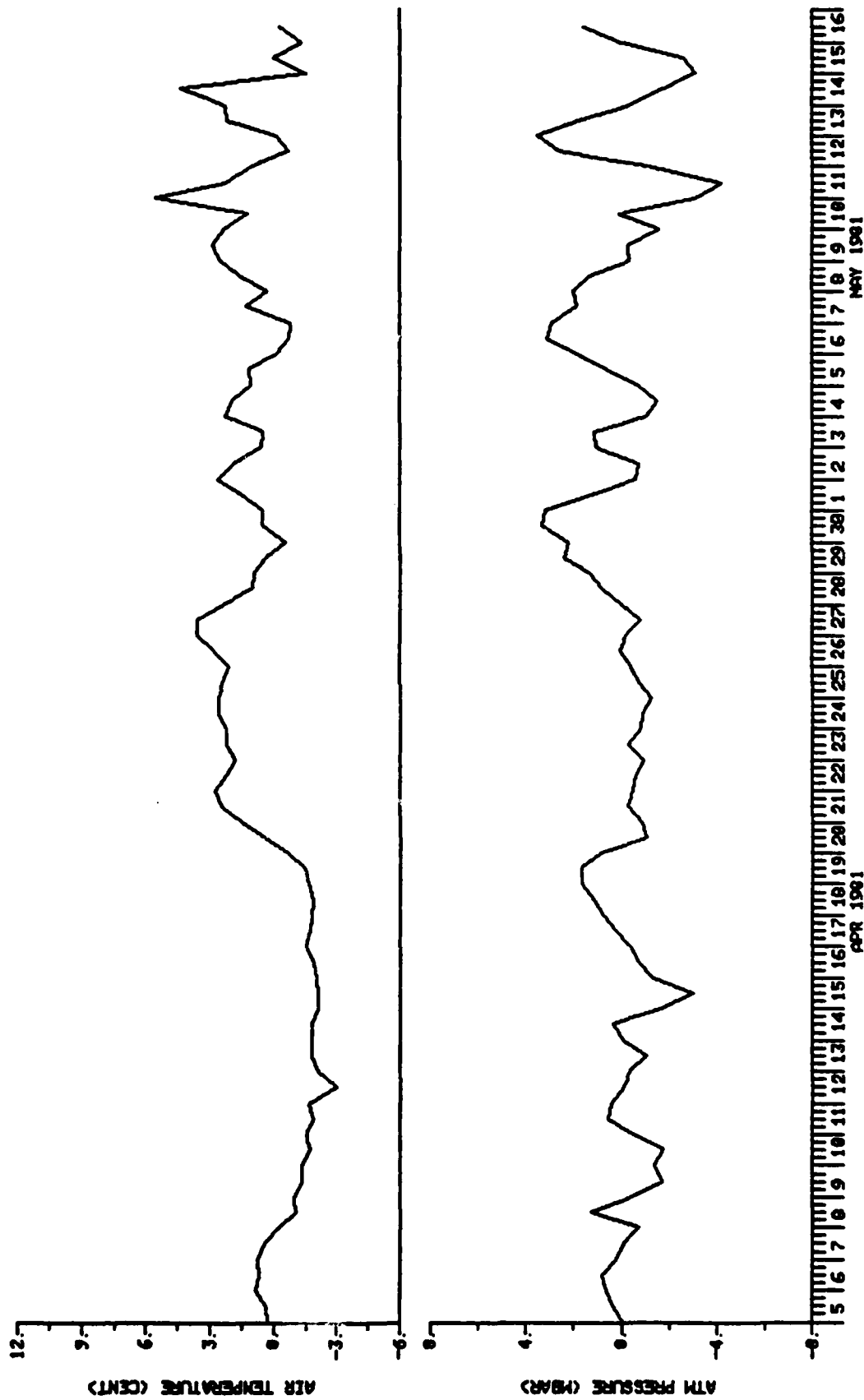
DIFFERENCE BETWEEN LOCATIONS 70.5 H 139.0 W AND 71.0 H 146.0 W



USCG BEAUFORT SEA STUDY

PAGE 1

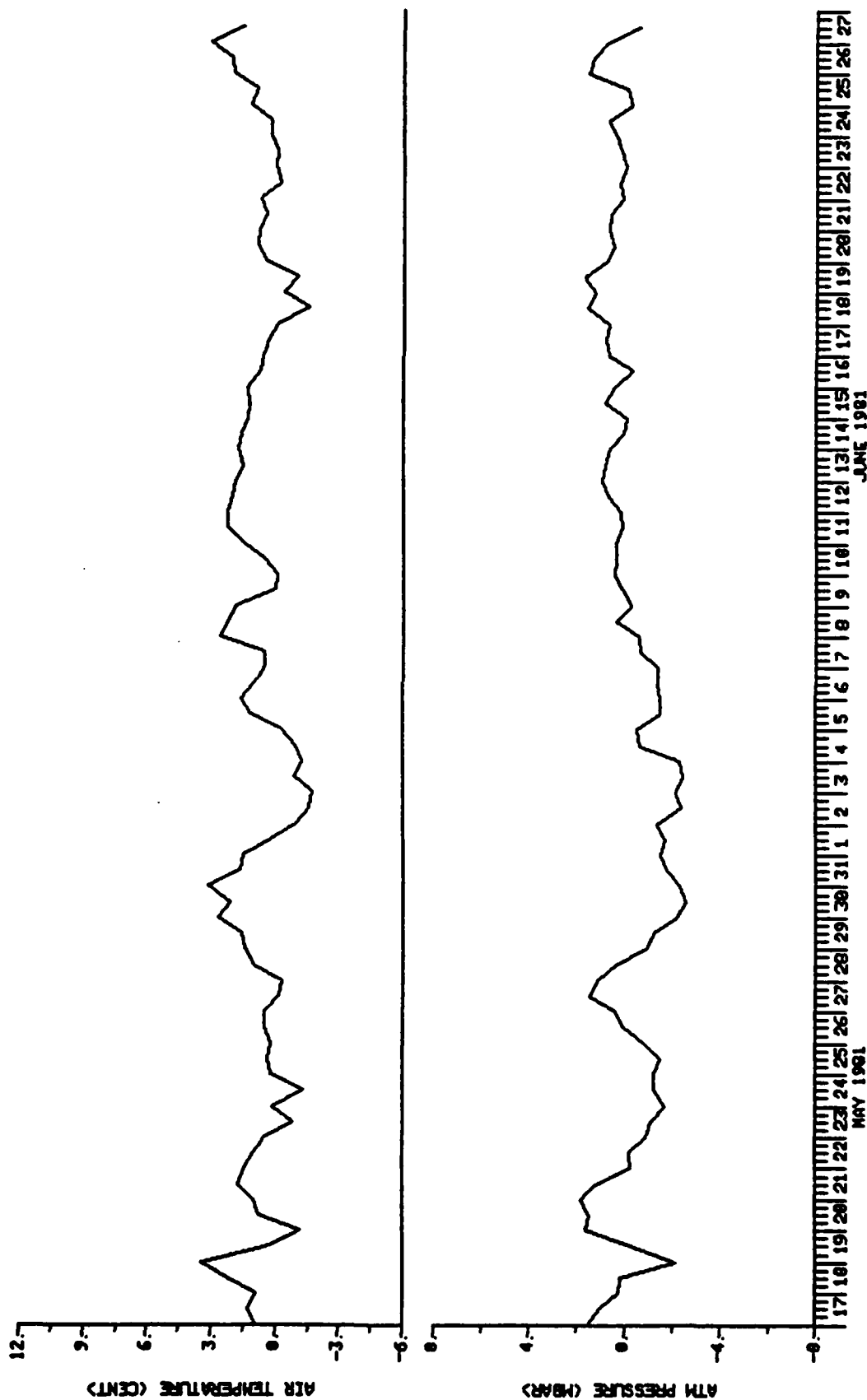
DIFFERENCE BETWEEN LOCATIONS 71.0 N 146.0 W AND 71.5 N 153.0 W



USCG BEAUFORT SEA STUDY

PAGE 2

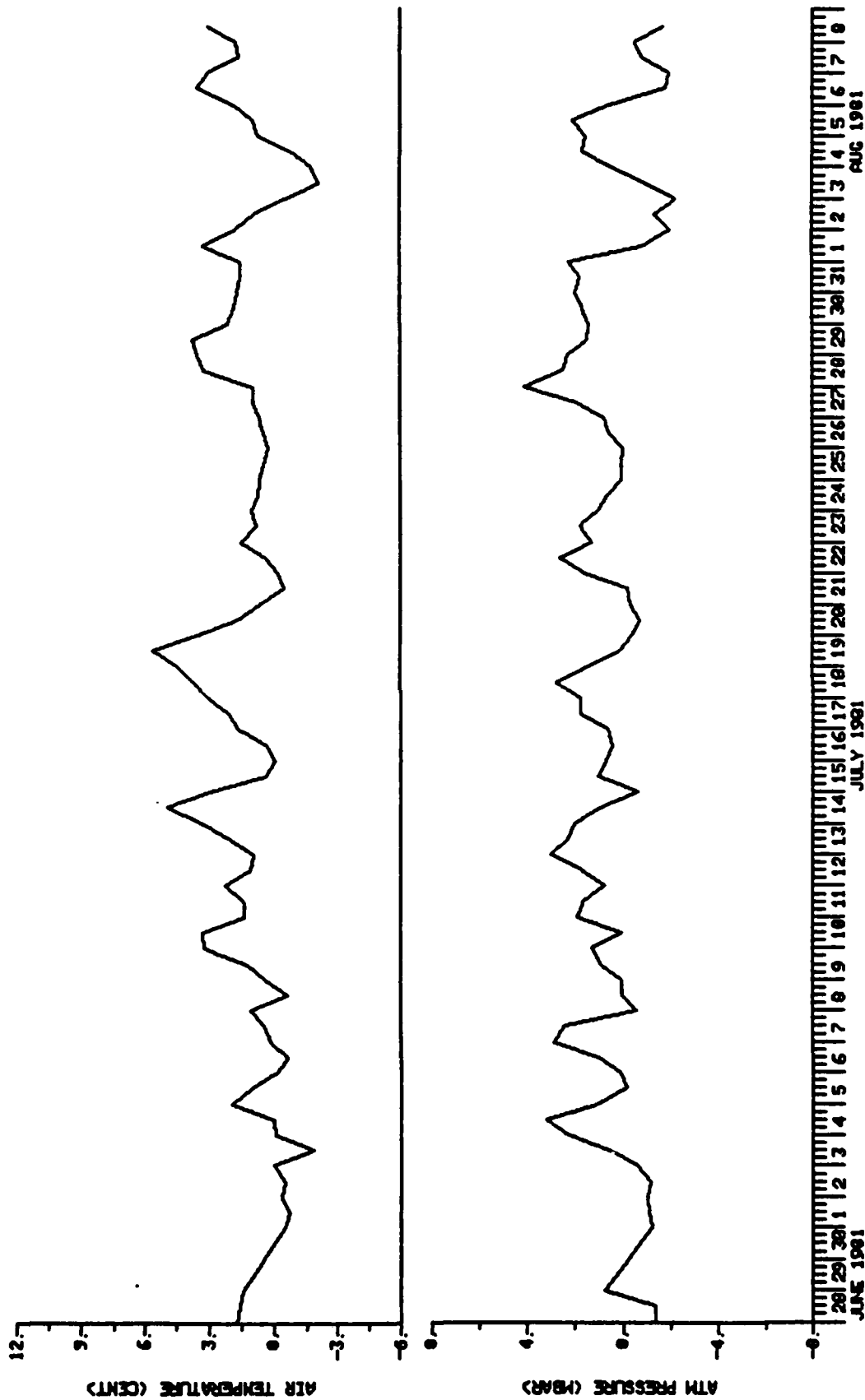
DIFFERENCE BETWEEN LOCATIONS 71.0 N 146.0 W AND 71.5 N 153.0 W



USCG BEAUFORT SEA STUDY

PAGE 3

DIFFERENCE BETWEEN LOCATIONS 71.0 H 146.0 W AND 71.5 H 153.0 W



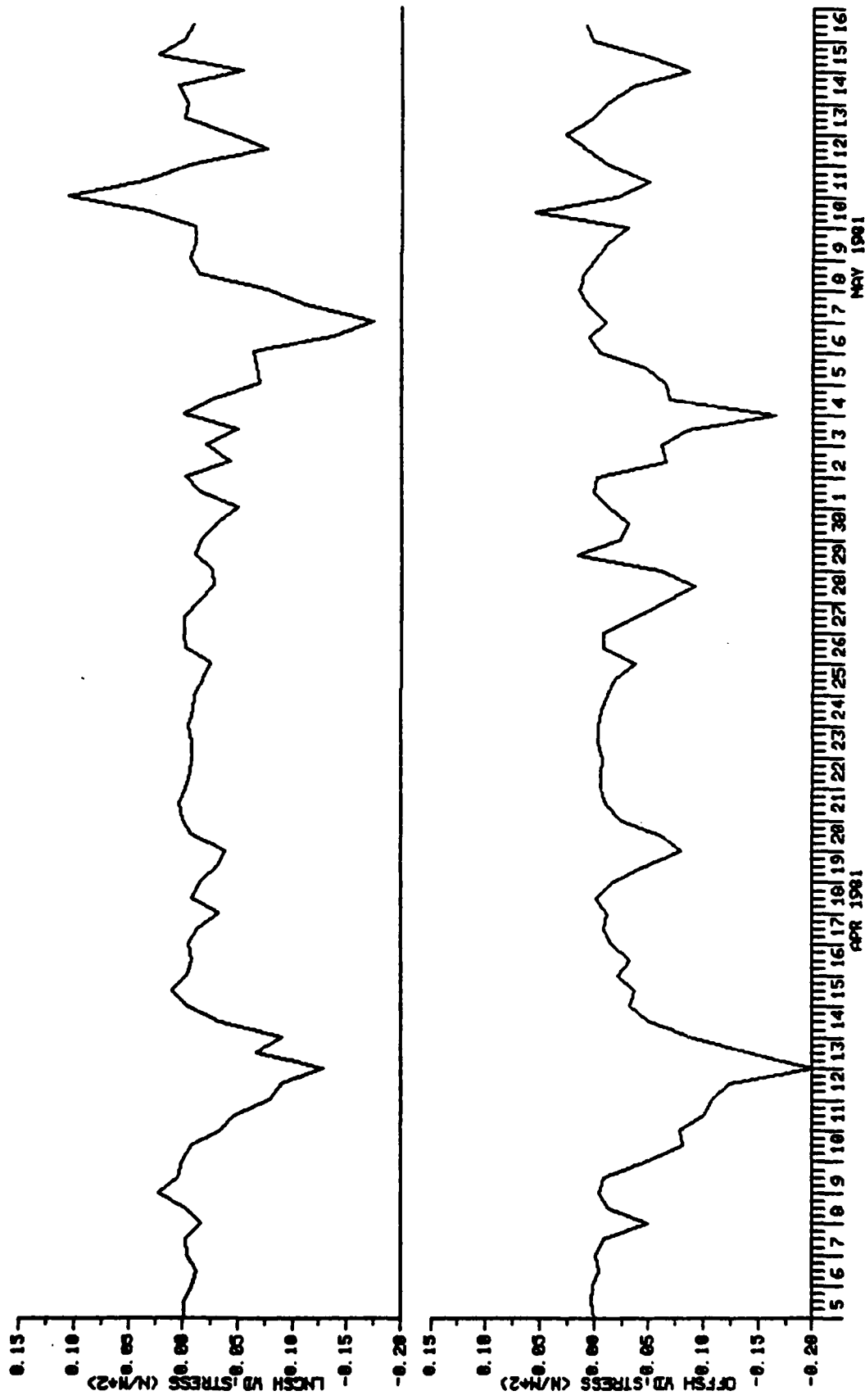
DATA APPENDIX 15

Time Series Plots of the Differences in Longshore and Offshore
Wind Stress Components between Selected Points

USCG BEAUFORT SEA STUDY

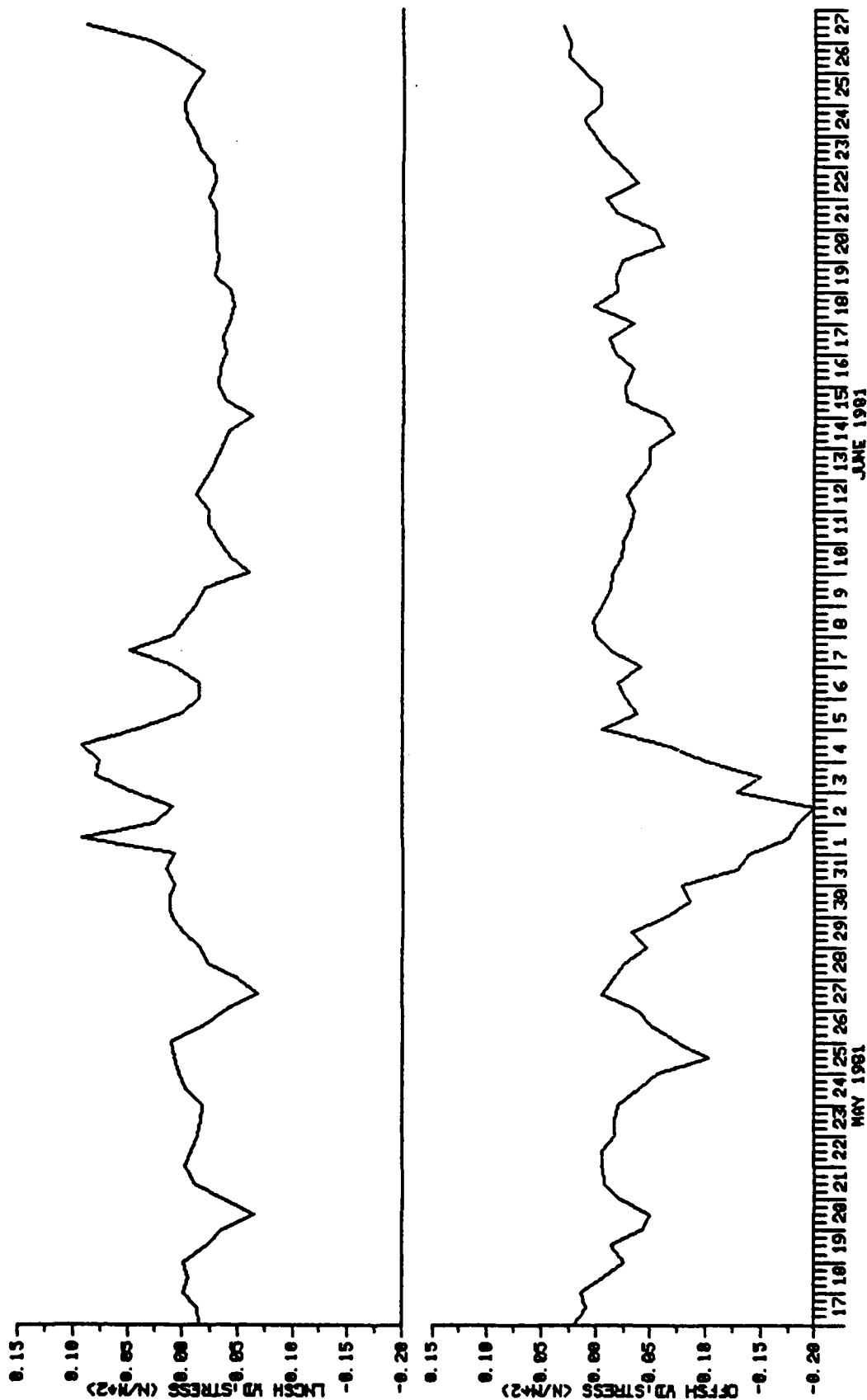
DIFFERENCE BETWEEN LOCATIONS 71.5 H 153.0 V AND 70.0 H 165.0 V FILTERED A_1^2

PAGE 1



USCG BEAUFORT SEA STUDY

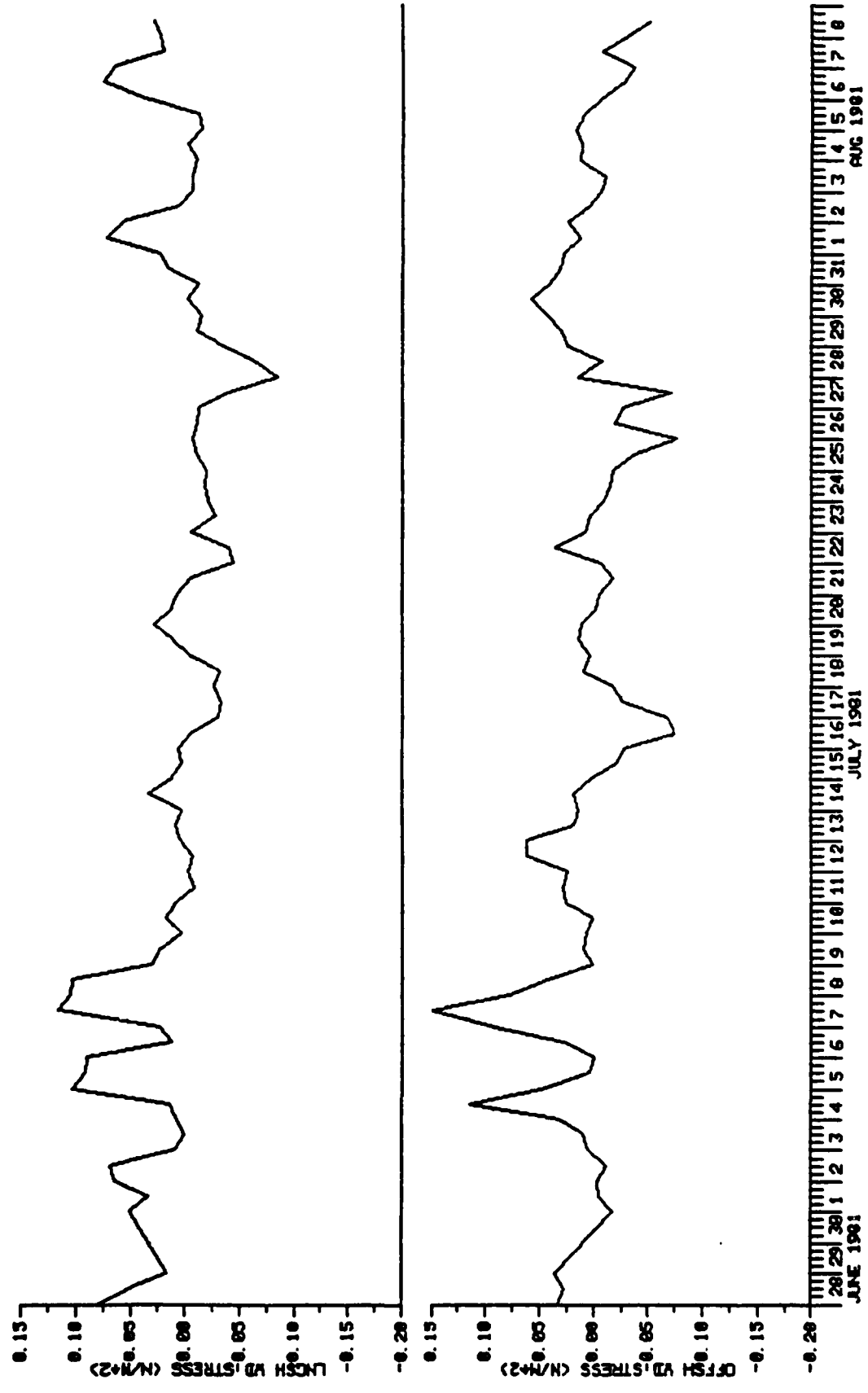
DIFFERENCE BETWEEN LOCATIONS 71.5 H 153.0 W AND 70.0 H 165.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

PAGE 3

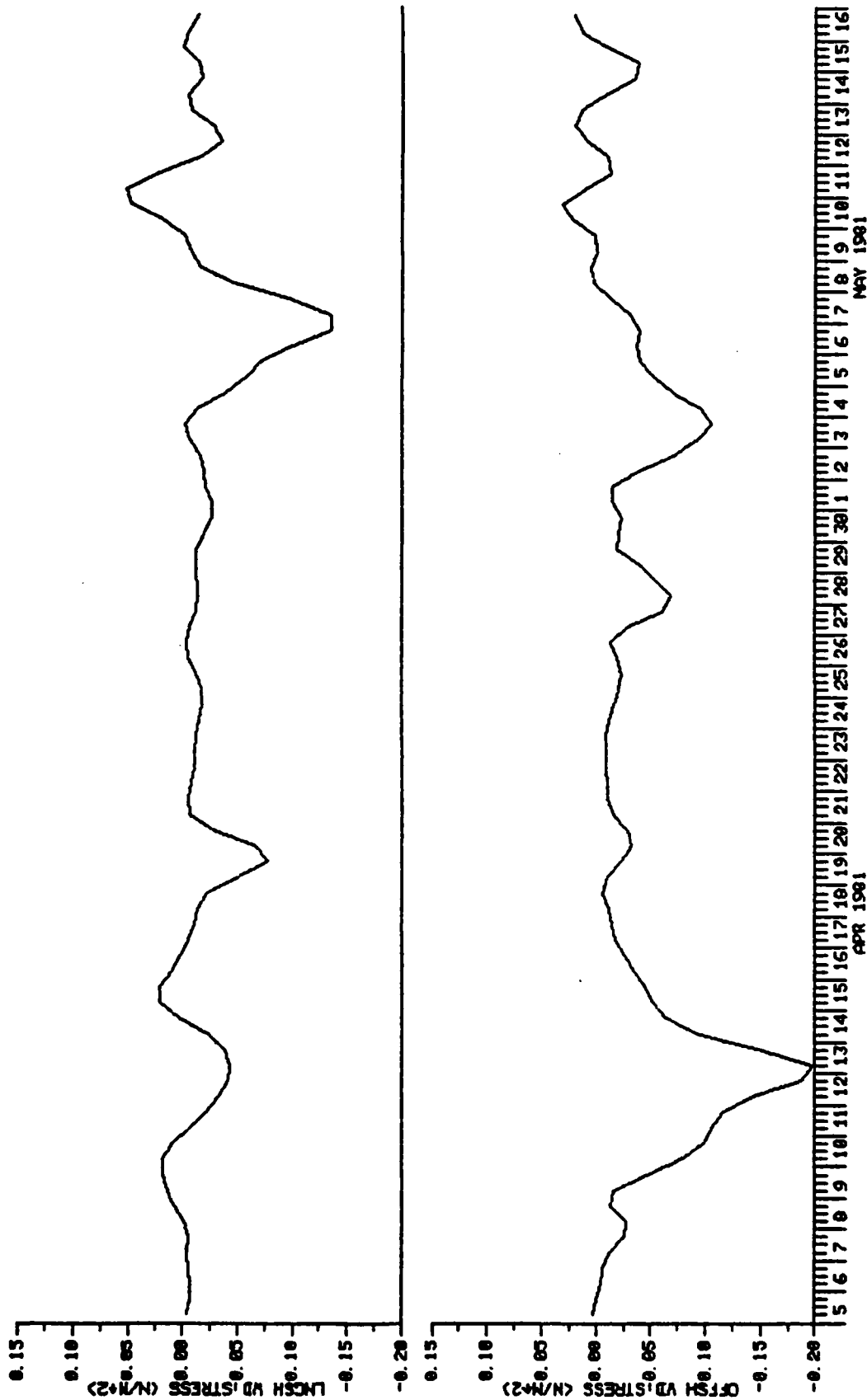
DIFFERENCE BETWEEN LOCATIONS 71.5 N 153.0 W AND 70.0 N 155.0 W FILTERED A_1^2



USCG BEAUFORT SEA STUDY

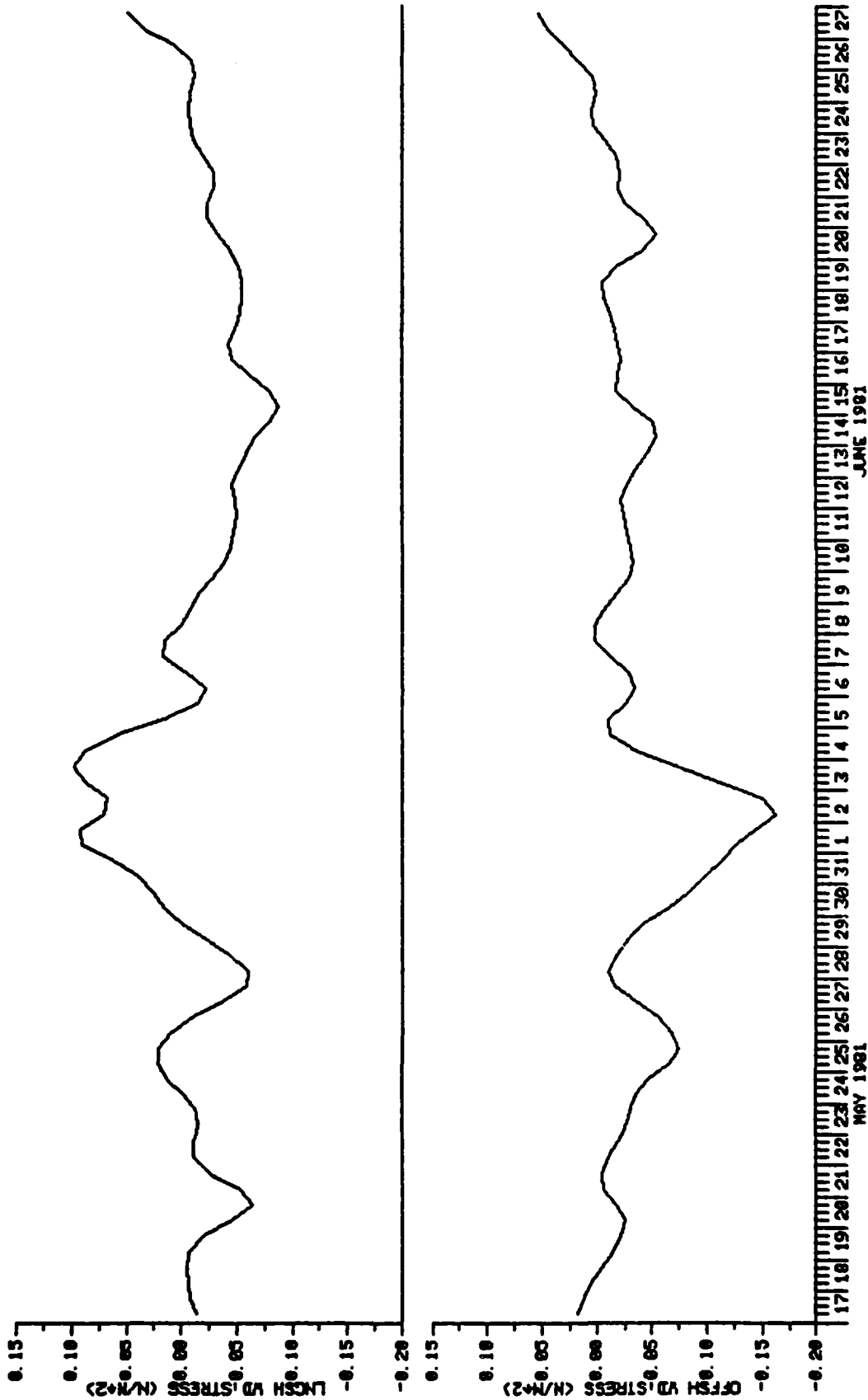
DIFFERENCE BETWEEN LOCATIONS 71.0 N 146.0 W AND 70.0 N 165.0 W FILTERED A_2

PAGE 1



USCG BEAUFORT SEA STUDY

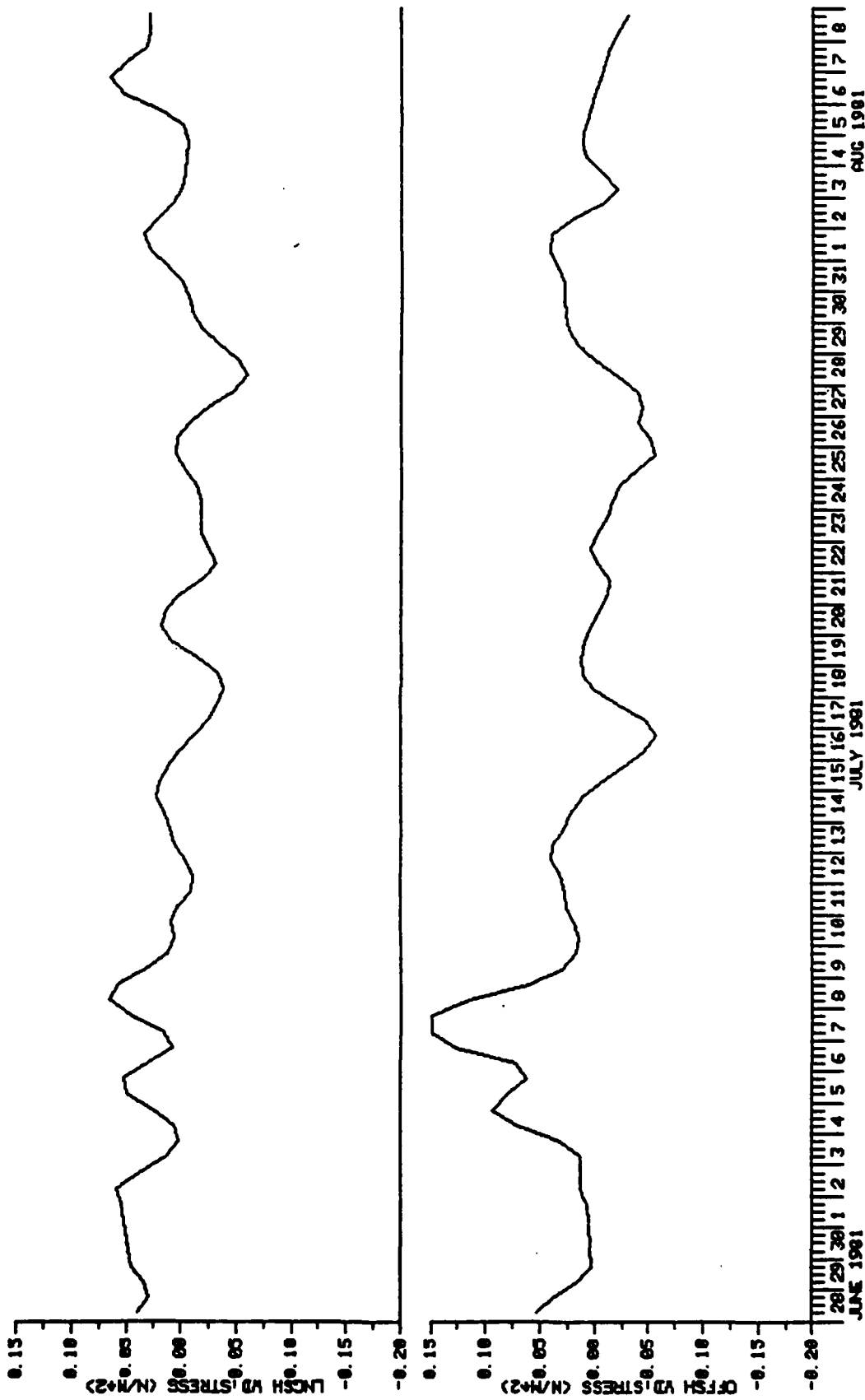
DIFFERENCE BETWEEN LOCATIONS 71.0 H 146.0 H AND 70.0 H 165.0 H FILTERED A_2^2



USCG BEAUFORT SEA STUDY

PAGE 3

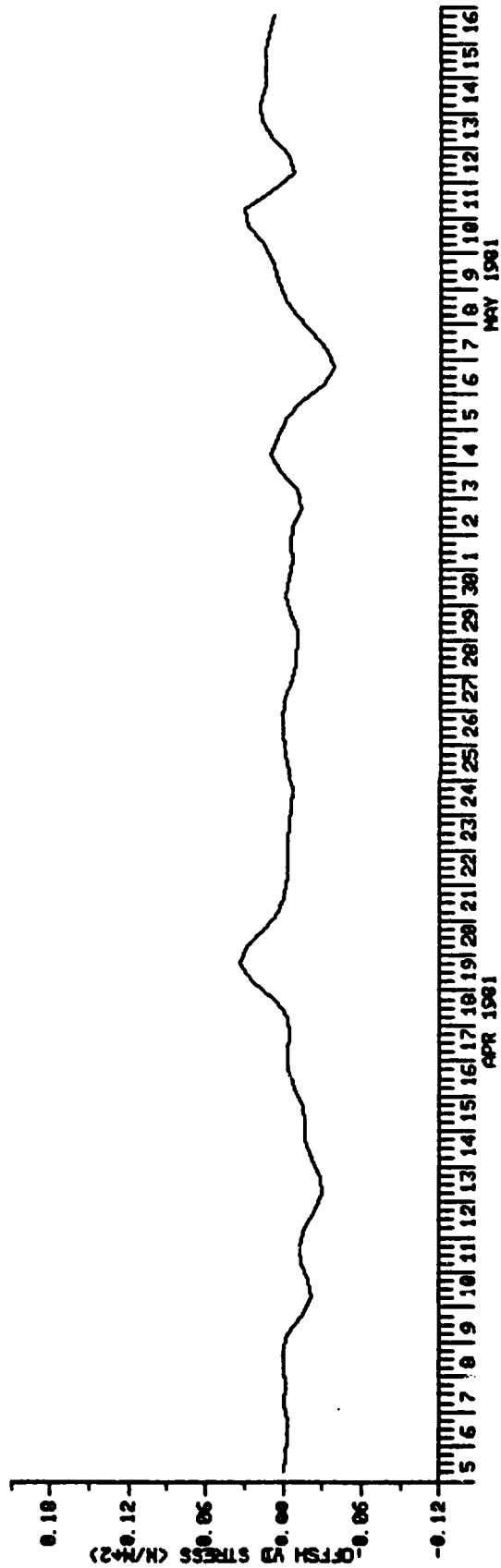
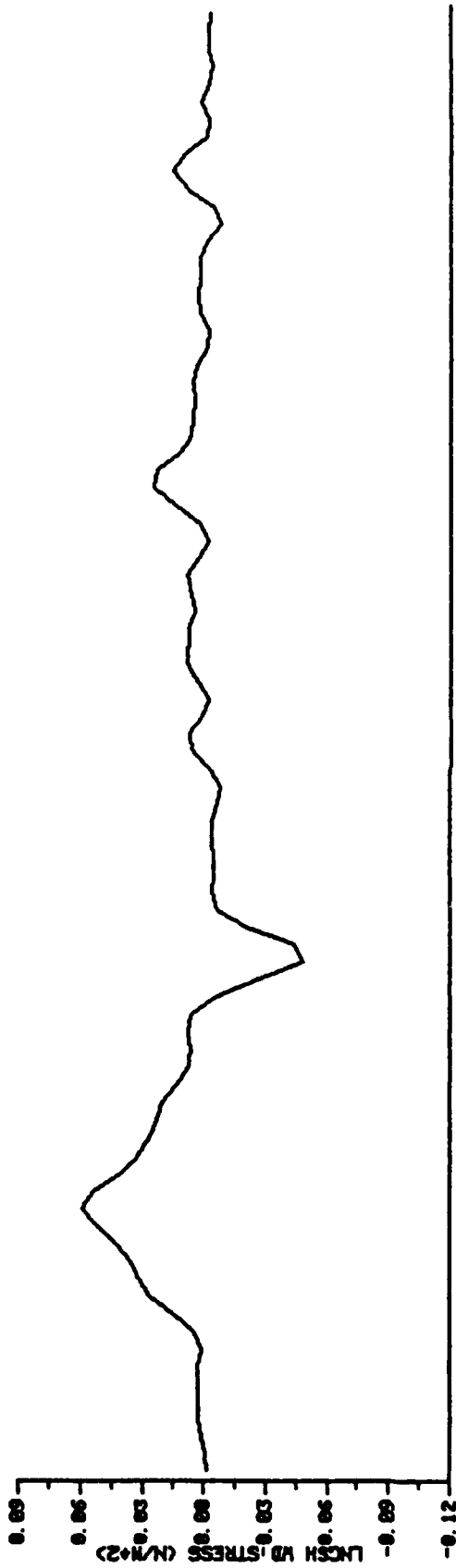
DIFFERENCE BETWEEN LOCATIONS 71.0 H 146.0 V AND 70.0 H 165.0 V FILTERED A_2^2



USCG BEAUFORT SEA STUDY

DIFFERENCE BETWEEN LOCATIONS 71.0 H 146.0 V AND 71.5 H 153.0 V FILTERED A₂

PAGE 1



MAY 1981

APR 1981

AD-A145 197

ANALYSIS AND INTERPRETATION OF CURRENT MEASUREMENTS
FROM THE BEAUFORT SEA(U) DOBROCKY SEATECH LTD SIDNEY
(BRITISH COLUMBIA) P GREISMAN ET AL. APR 84

6/6

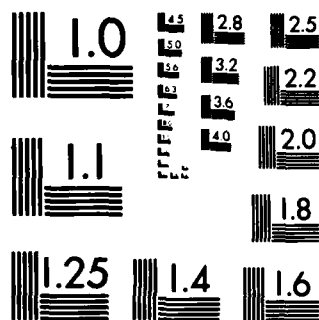
UNCLASSIFIED

USCG-D-18-84

F/G 8/3

NL



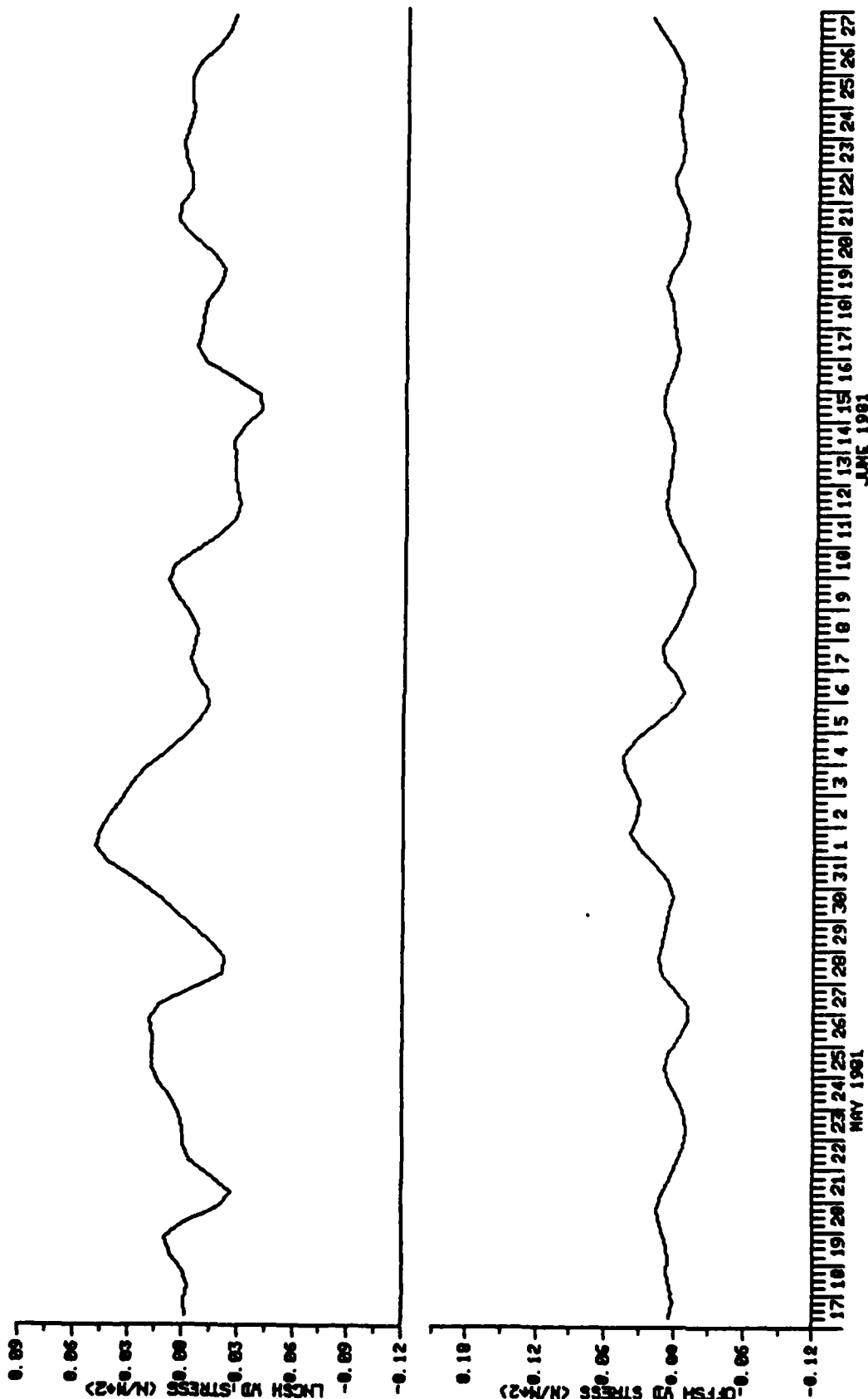


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

USCG BEAUFORT SEA STUDY

DIFFERENCE BETWEEN LOCATIONS 71.0 H 146.0 V AND 71.5 H 153.0 V FILTERED A_2^2

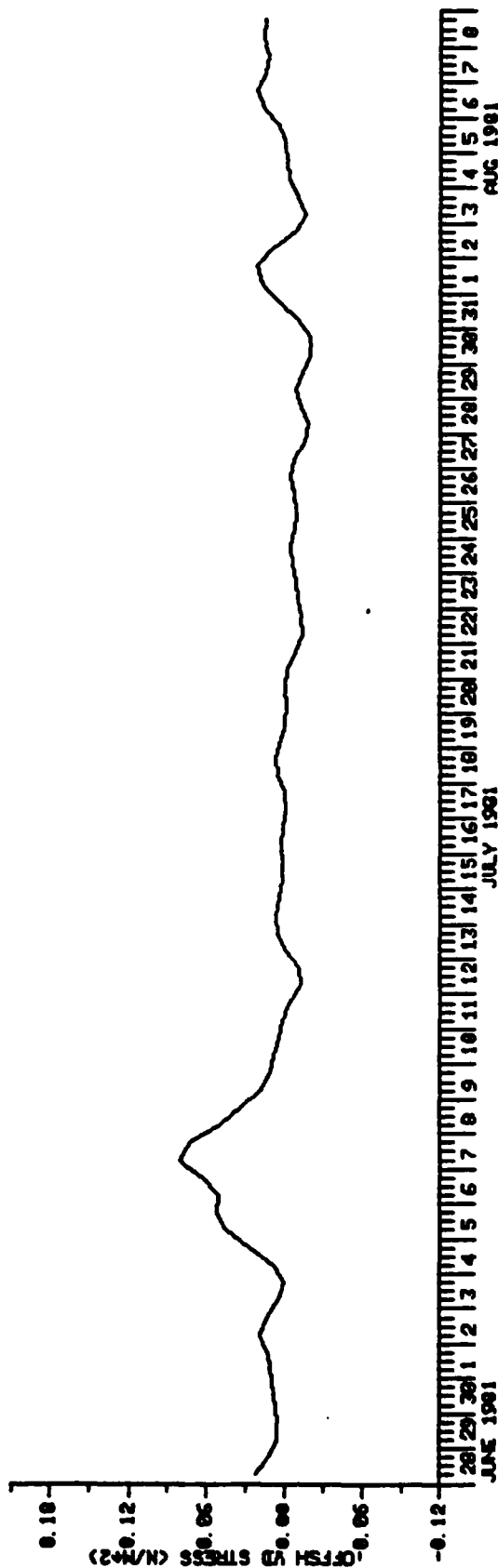
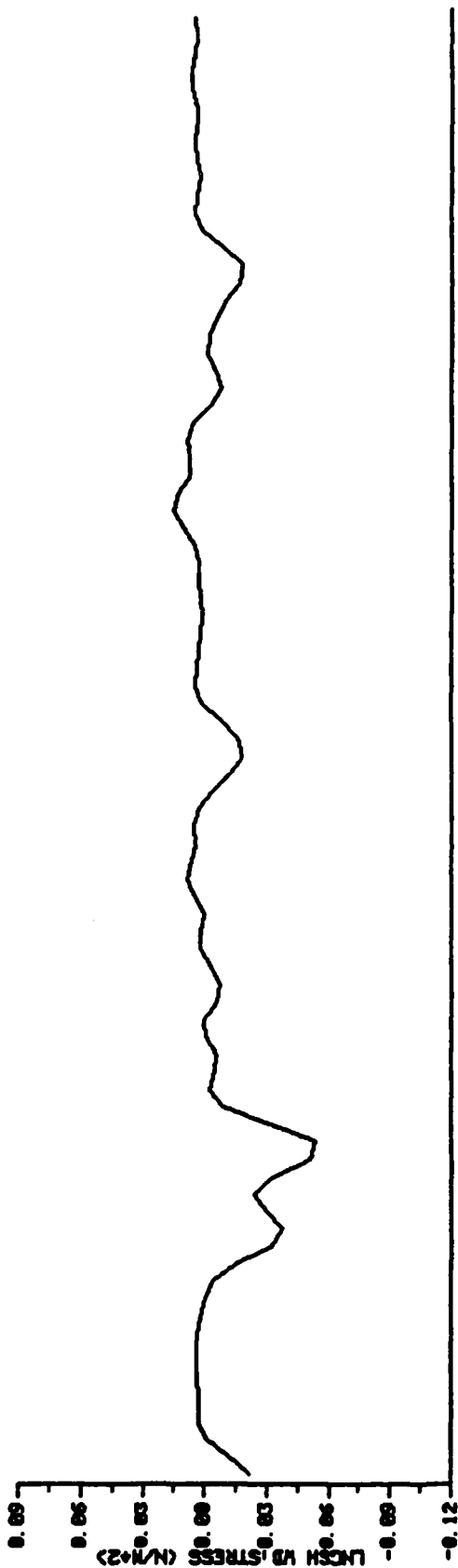
PAGE 2



USCG BEAUFORT SEA STUDY

PAGE 3

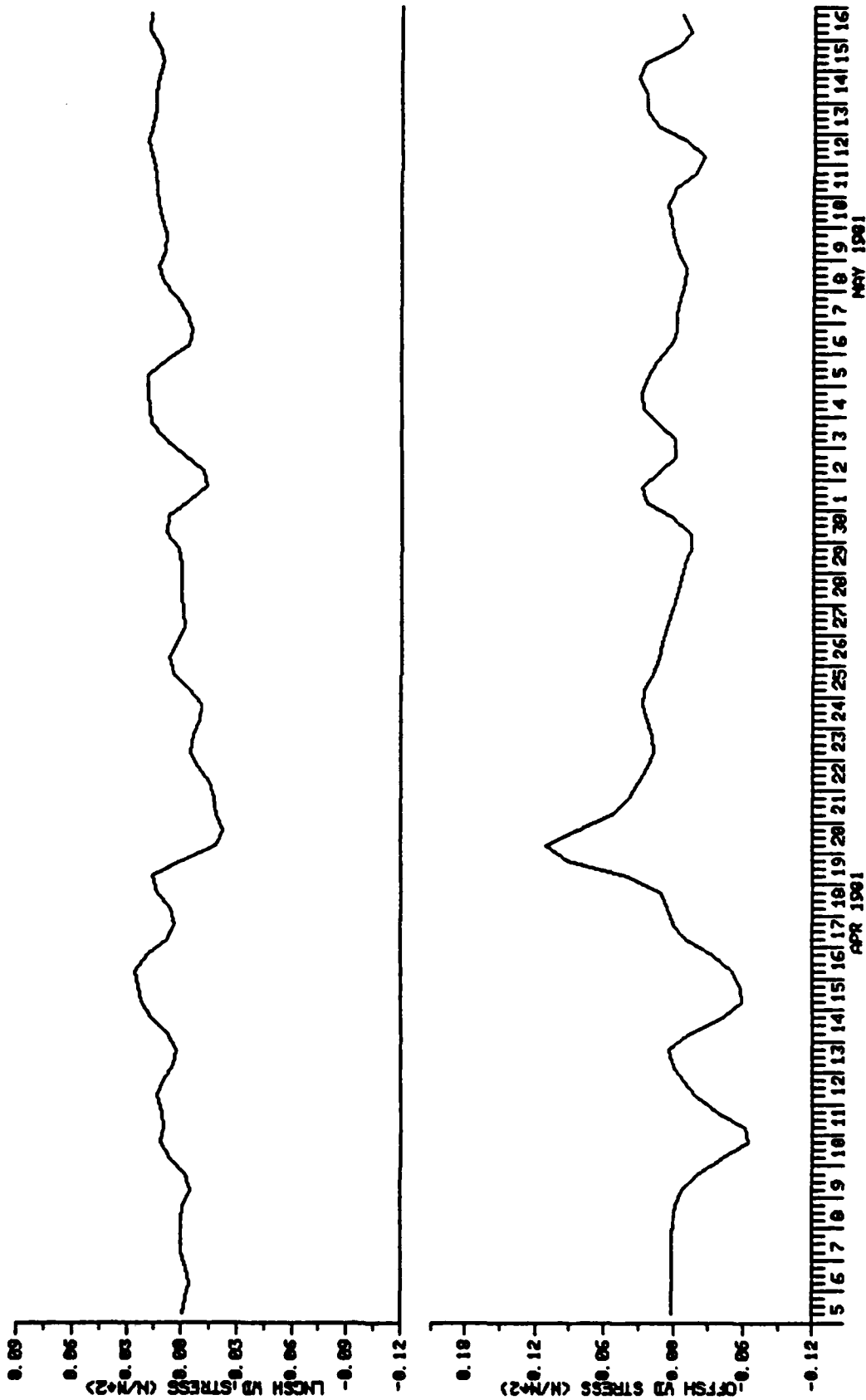
DIFFERENCE BETWEEN LOCATIONS 71.0 N 146.0 W AND 71.5 N 153.0 W FILTERED A_2^2



USCG BEAUFORT SEA STUDY

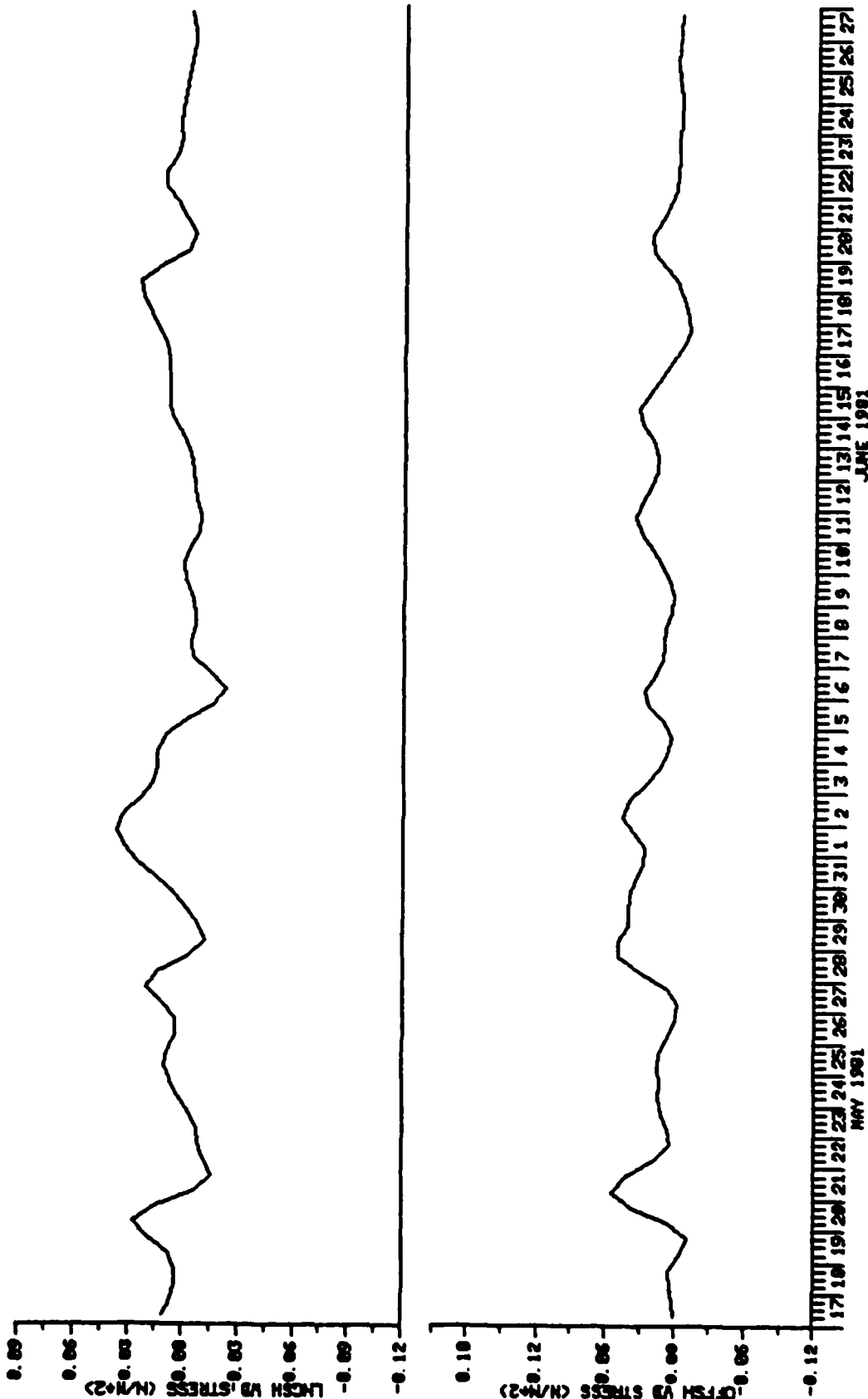
DIFFERENCE BETWEEN LOCATIONS 70.5 H 139.0 V AND 71.0 H 146.0 V FILTERED A₂

PAGE 1



USCG BEAUFORT SEA STUDY

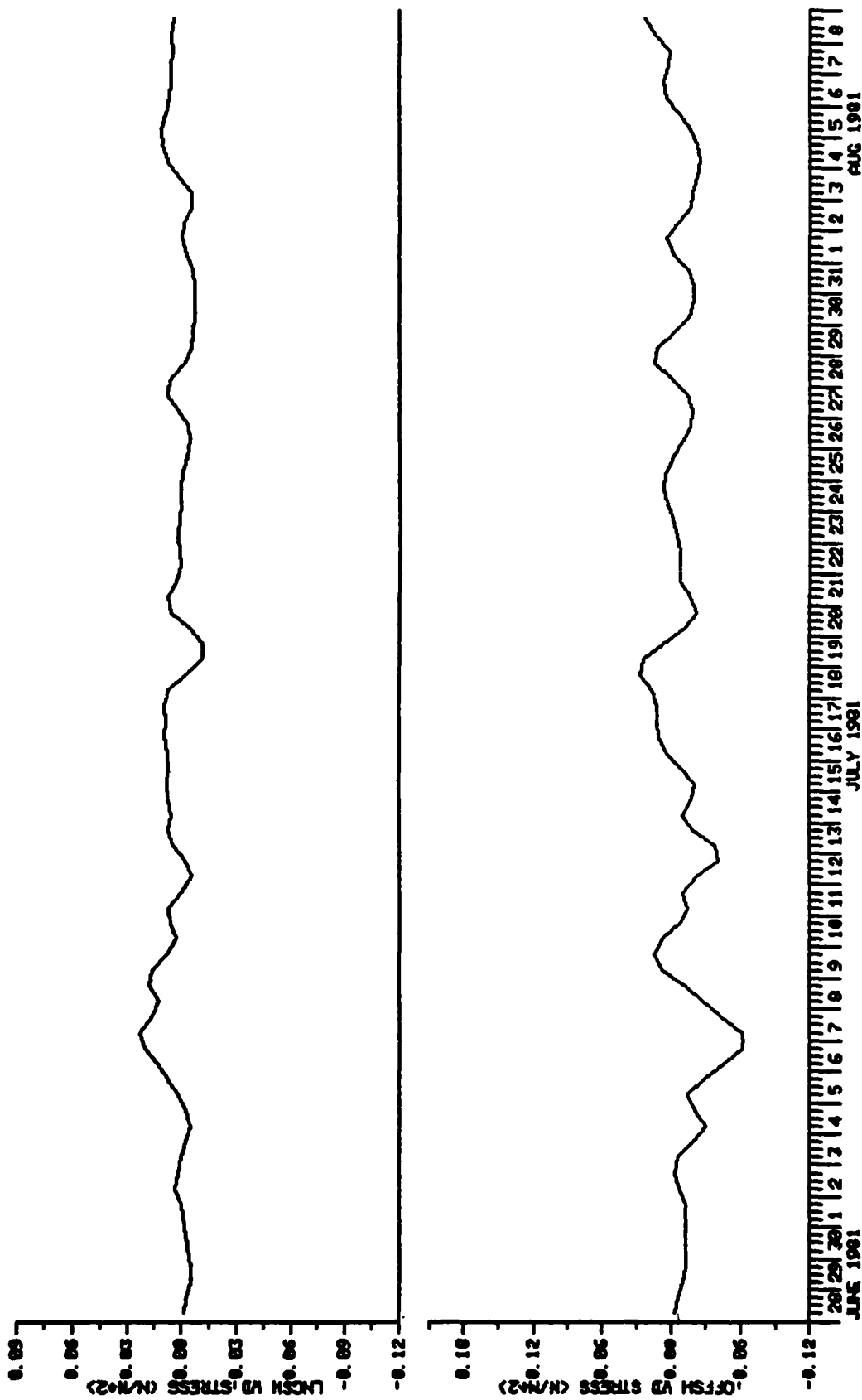
DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.0 N 146.0 W FILTERED A_2^2



USCG BEAUFORT SEA STUDY

PAGE 3

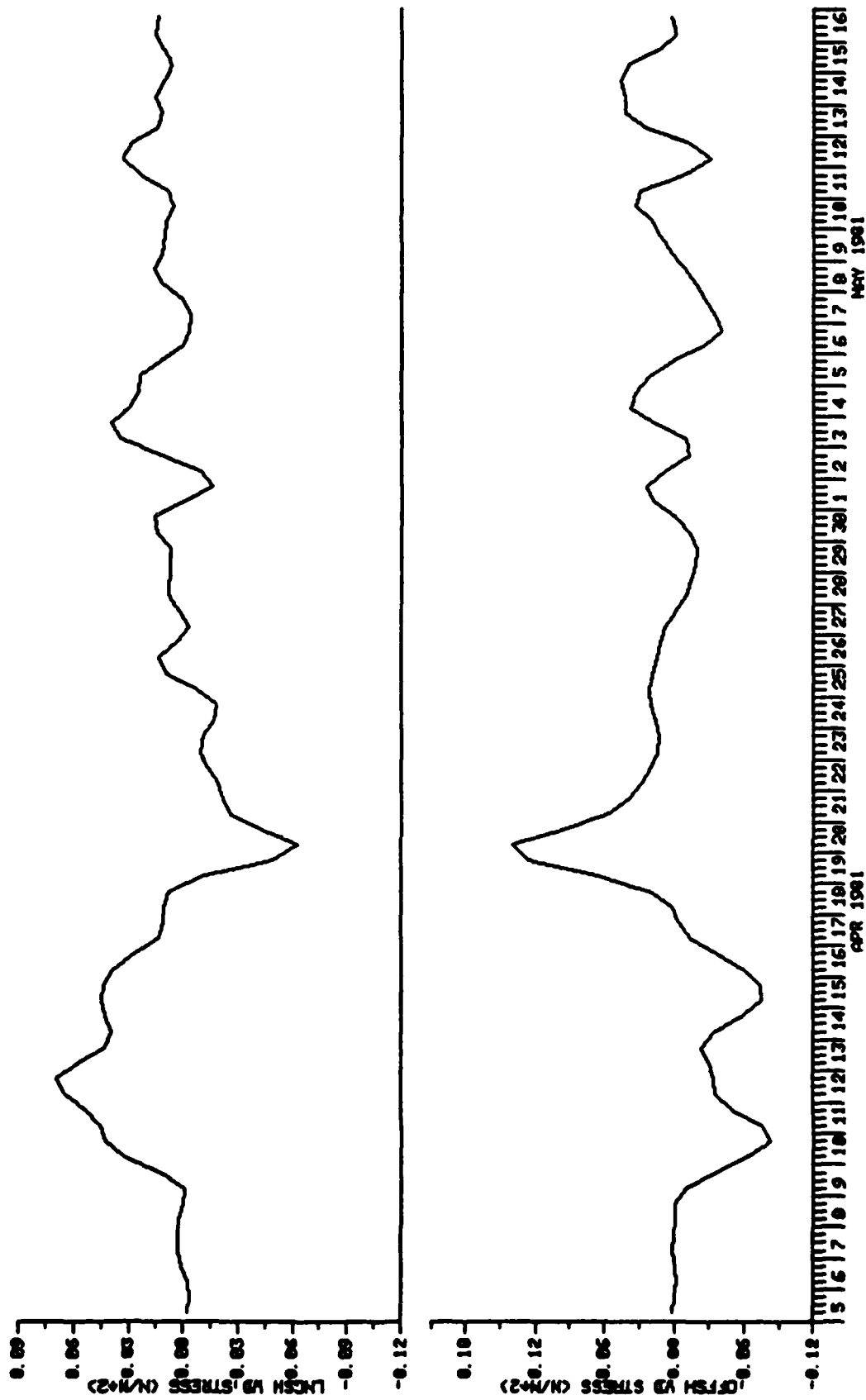
DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.0 N 146.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

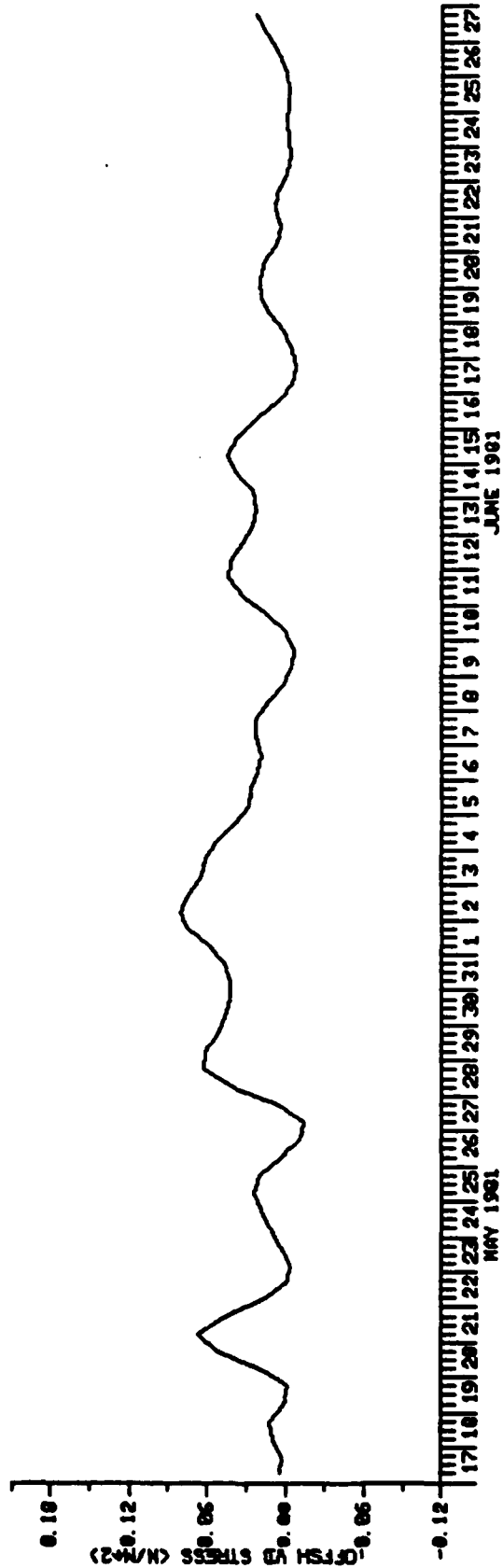
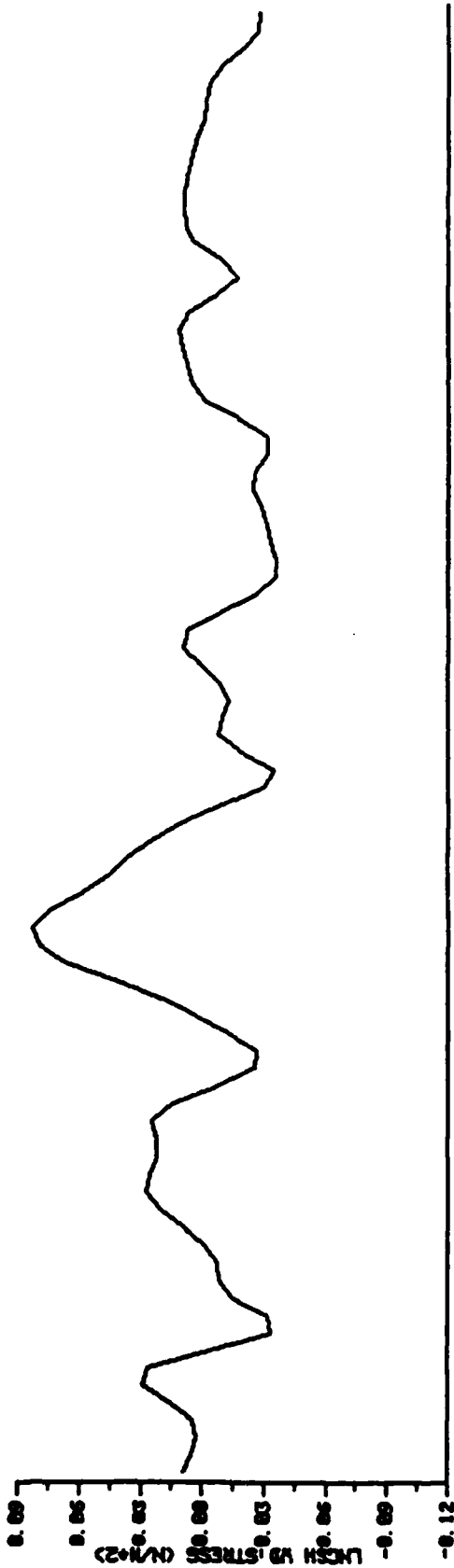
PAGE 1

DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.5 N 153.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

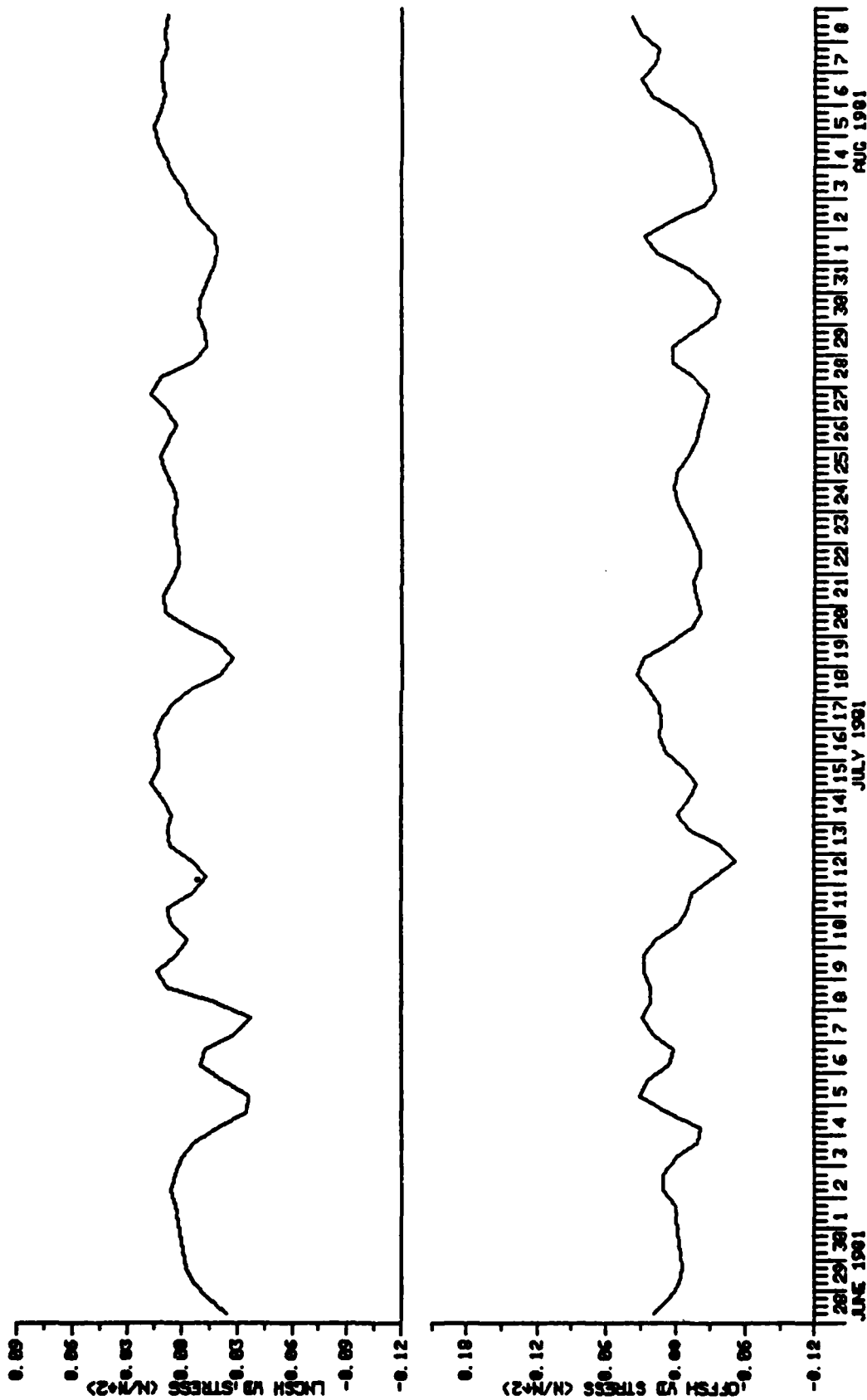
DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.5 N 153.0 W FILTERED A₂



USCG BEAUFORT SEA STUDY

PAGE 3

DIFFERENCE BETWEEN LOCATIONS 70.5 N 139.0 W AND 71.5 N 153.0 W FILTERED A₂



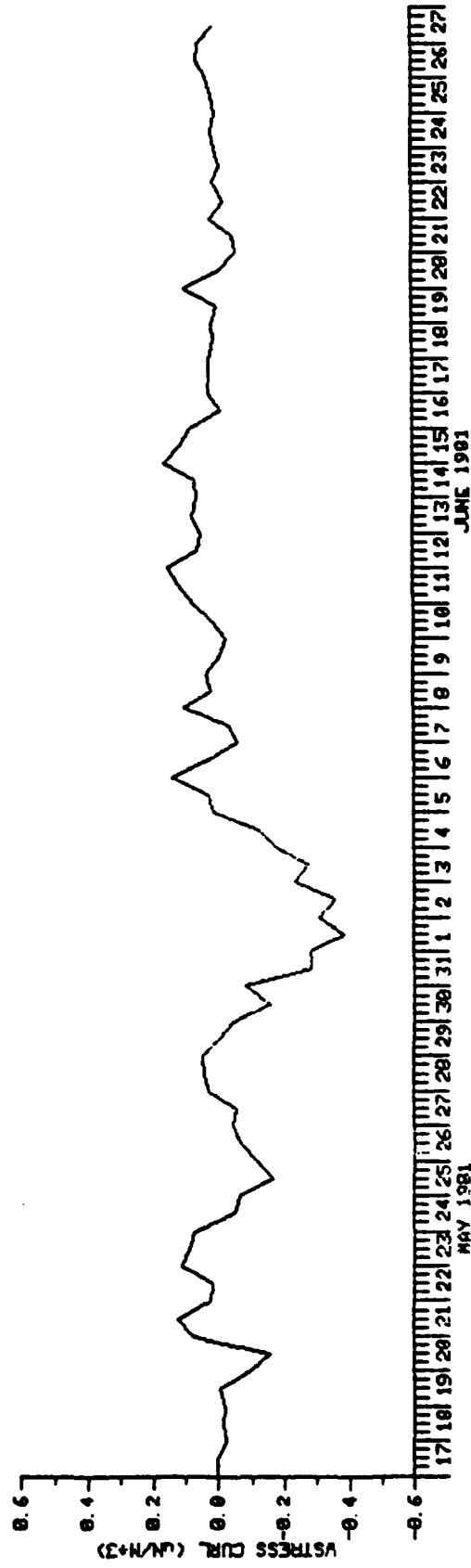
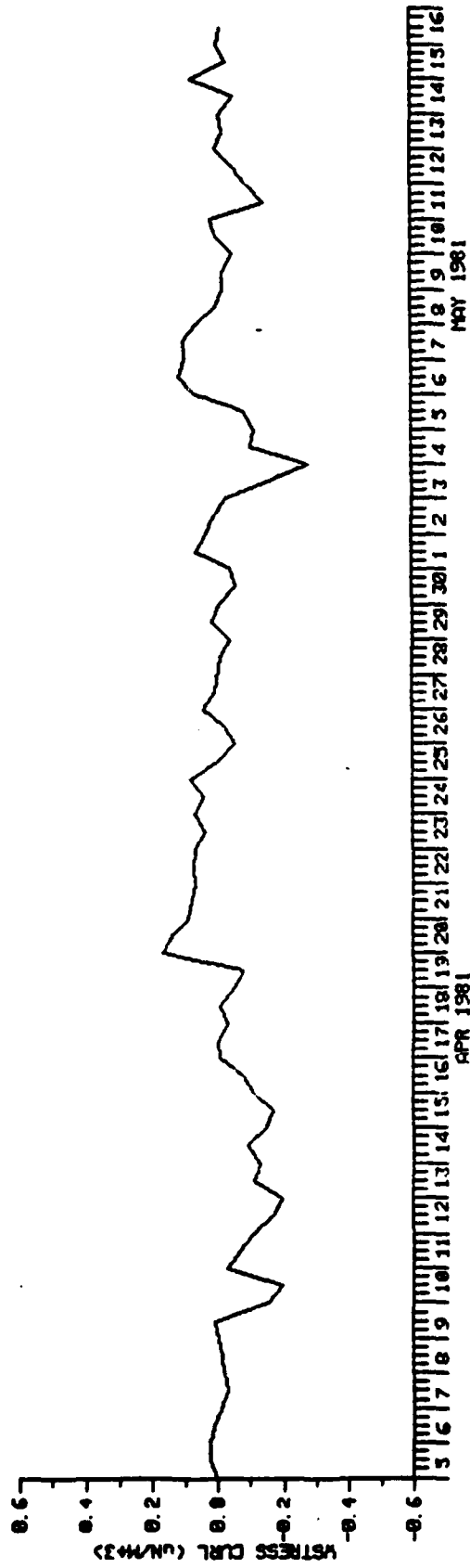
DATA APPENDIX 16

Time Series Plots of the Curl of the Wind Stress at Two Locations

USCG BEAUFORT SEA STUDY

PAGE 1

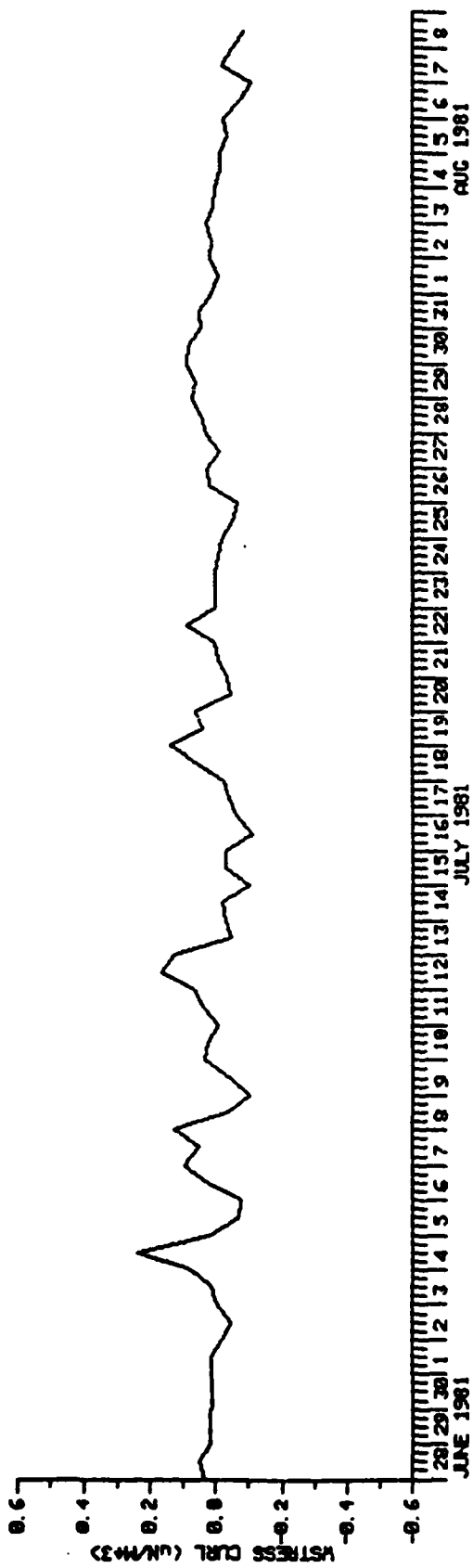
71.0 N 146.0 W



USCG, BEAUFORT SEA STUDY

PAGE 2

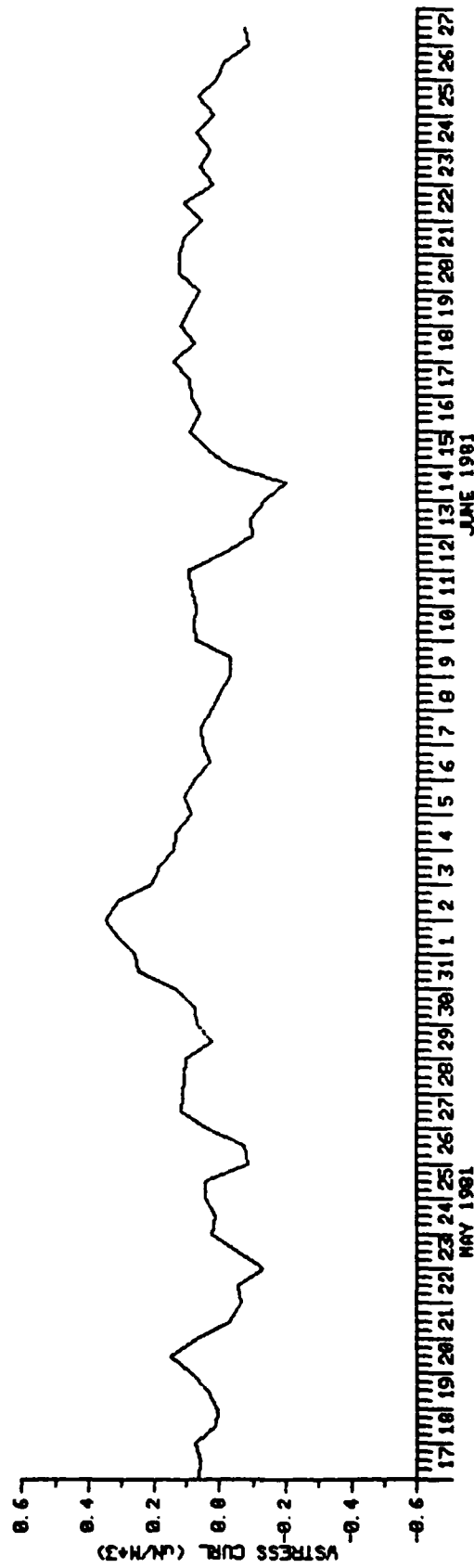
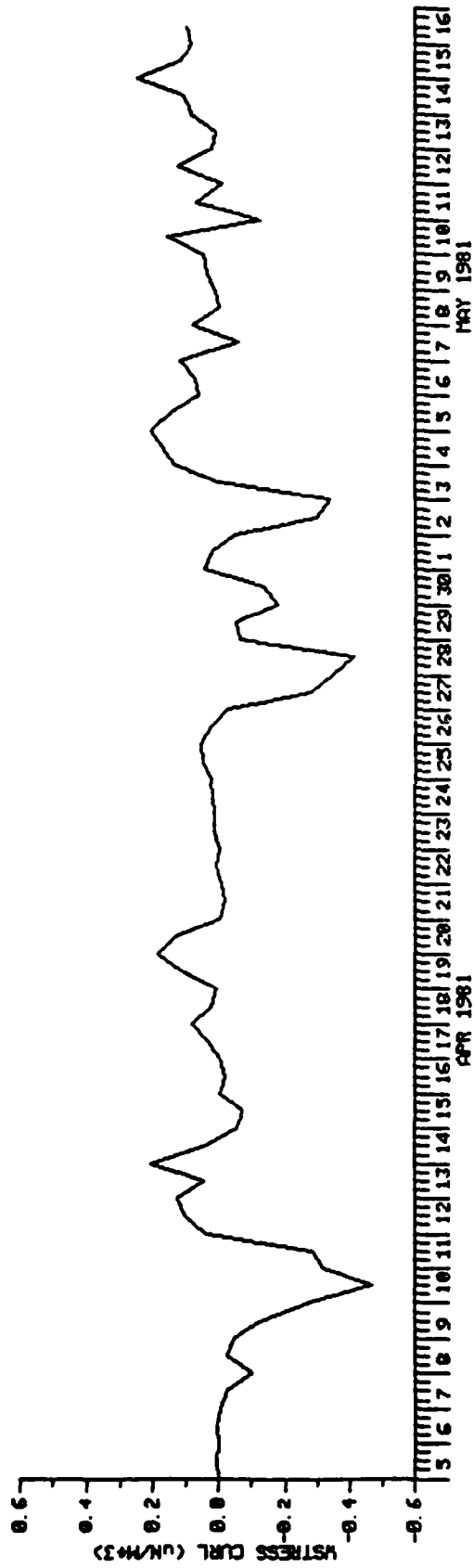
71.0 H 146.0 V



USCG BEAUFORT SEA STUDY

PAGE 1

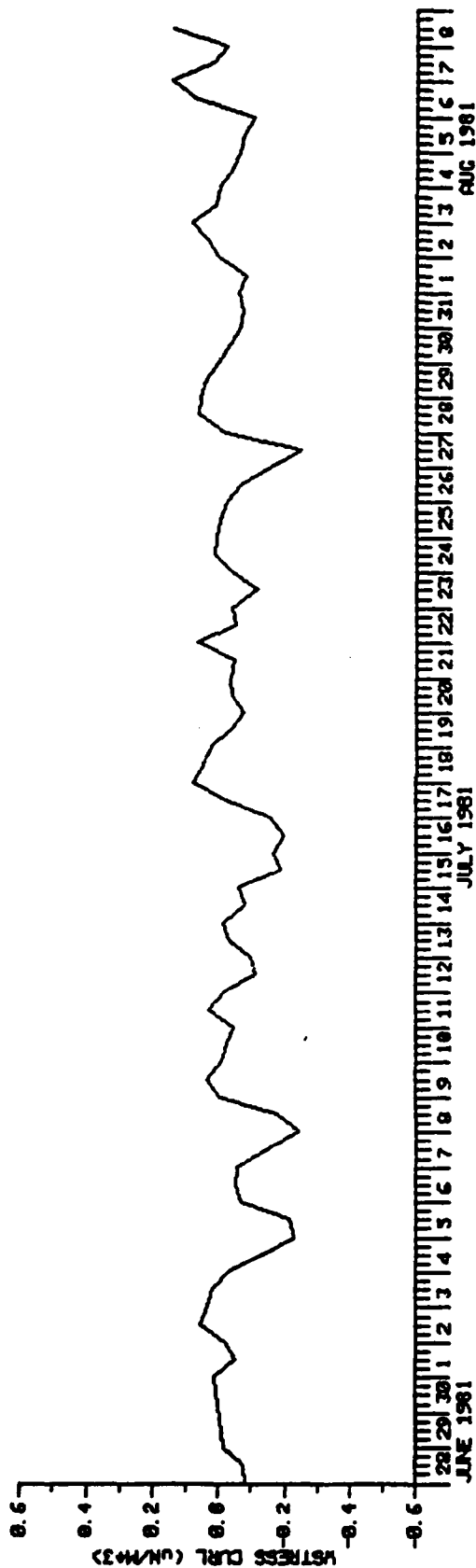
71.0 N 167.0 W



USCG BEAUFORT SEA STUDY

PAGE 2

71.0 N 167.0 W



END

FILMED

10-84

DTIC